THE

AMERICAN REVIEW OF TUBERCULOSIS
ABSTRACTS OF TUBERCULOSIS

VOLUME XXXI MAY, 1935 ABST. NO. 2

CONTENTS

	PAGES
Diagnosis	
b. *Roentgenological (concluded)*	25–26
c. *Tuberculin and Bacteriological*	26–28
Tuberculosis of Organs Other than the Lungs	28–34
Treatment	
a. *General, sanatorium, climatic, heliotherapy, dietetic*	34–36
b. *Chemotherapy*	36–37
c. *Surgical (artificial pneumothorax, oleothorax, phrenicectomy, thoracoplasty, pneumonolysis)*	37–43
Nontuberculous Conditions	43–56

Examination of Chest in Lateral Decubitus.—Posterior-anterior roentgenograms, taken in the lateral decubitus position with the patient on the affected side, show the amount and confines of pleural effusions. It is necessary to bring the film itself to the very margin of the chest-wall on the affected side. X-rays similarly taken, except that the patient is placed on the unaffected side, show the affected lung field more clearly since the heart shifts toward the healthy side. This position will also demonstrate loculated effusions or pathological involvement of the parietal pleura in hydropneumothorax cases. Two case histories with X-rays are given. A casette-holder is also pictured.—*Examination of the Chest in Lateral Decubitus, S. Brown, Am. J. Roentgenol., January, 1934, xxxi, 41.*—(*E. M. J.*)

Nodular Shadows in Chest Films.—Nodular shadows of varying density are frequently seen on roentgenograms of the chest. In 40 cases roentgenological pathological studies were made to determine the nature of these shadows. Only 60 per cent of the roentgenologically visible shadows could be identified anatomically. In 53 shadows of calcific density, at least the size of a cherry, the following anatomical findings were present: 8 foci were ossified, 13 calcified, 5 fibrous or caseated, 3 were calcified or ossified bronchial cartilages, 4 were simulated by the crossing of a blood-vessel with a bronchus, and for 11 shadows of apparent calcific density no definite alteration could be found. In 104 instances anatomical equivalents could be determined for small nodular shadows, as follows: 30 contained bone, 33 lime salts, 28 were strictly fibrous, 4 were thrombosed vessels, 3 were pus-filled bronchi and 3 remained unexplained. The 40 per cent of shadows that could not be demonstrated in the anatomical specimen have been interpreted as vascular or bronchial shadows. Not all calcified foci are of tuberculous origin, since other necroses may undergo calcification and even ossification. Fibrous nodules may be caused by subpleural anthracotic lymph nodes. These studies are documented by 27 roentgenographic and pathological illustrations.—*Über knötchenartige Zeichnungen auf den Thoraxaufnahmen, W. Glitsch, Beitr. Klin. Tuberk., June, 1934, lxxxv, 32.*—(*M. P.*)

X-Ray Diagnosis of Atelectasis.—The confusion that exists concerning the roentgen diagnosis of atelectasis is due, in part, to the lack of agreement regarding the definition of the term and, in part, to a lack of pathognomonic signs. Atelectasis is here restricted to mean complete airlessness and alveolar collapse of the lungs. It is desig-

nated as *massive* when the area involved is large enough to permit the determination of the consistence of the X-ray shadow and *focal* when the area is not so large. Three sources of material form the basis of this study; namely, massive atelectasis produced artificially in dogs, specimens of human lungs obtained fresh at autopsy and presenting examples of atelectasis and all of the other common varieties of consolidating lesions, and roentgenograms of chests of living human subjects presenting these lesions. Massive atelectasis, in dog or in man, always exhibits a homogeneous roentgen shadow which is referred to by the descriptive name of "ground-glass" shadow. The common consolidating lesions of the lung, which are confused with atelectasis, present a distinctly heterogeneous consistency of shadow because of the presence of residual air. This latter finding is characteristic of pneumonia, tuberculosis, and haemorrhagic infarction. In focal atelectasis the roentgenogram presents scattered mottlings, cloudings, and streaks, which correspond to the positions of the individual foci of alveolar collapse. In the congenital focal lesion, the markings tend to be arranged in lines radiating from the hilum. Pulmonary hypoventilation may be indistinguishable from focal atelectasis. Neoplasms and extrapulmonary lesions, as pleural effusions or thickened pleura, do not displace the viscera in the neighborhood of the lungs at all, or they displace them in a direction different from that found in atelectasis. This displacement is the result of pulmonary shrinkage. In atelectasis the dislocations occur at both inspiration and expiration. The hemidiaphragm on the side of the lesion will be elevated during the entire respiratory phase. Pneumonia produced experimentally in dogs presents some pulmonary shrinkage, but this is thought to be due to increased elastic tension of the parenchyma caused by thickening of the alveolar septa present during the inflammation. In clinical roentgenography, the diaphragm in pneumonia will be found elevated during inspiration only, if it is elevated at all.—*The Roentgen Diagnosis of Atelectasis, with Special Reference to the Ground-Glass Shadow and the Degree of Pulmonary Shrinkage, C. M. VanAllen, W. A. LaField & P. S. Ross, Radiology, January, 1934, xxii, 27.*—(*T. O. R.*)

Tuberculin Patch Test.—This test is performed by the application to the skin of the back of a pea-sized drop of a highly concentrated tuberculin and killed tubercle bacilli in an ointment base. The ointment base is used as a control, both areas being covered with a 2-inch square of adhesive tape. The test is read in 48 hours. Positive reactions exhibit papules, erythema, induration and pigmentation, the peak being reached at 72 hours. In 190 children who were tested by this method and by the intracutaneous test, there was agreement between the two tests in 95.8 per cent. Of this group, 128 were positive to one or both tests. In another group of 685 school children the tests agreed in 93.5 per cent. In general, the ointment-patch test is comparable, in its results, with the intracutaneous injection of 1 mgm. of O. T. The material is stable and easier to apply, and causes less psychic disturbance and less untoward general and vocal reactions than does the intracutaneous Old Tuberculin.—*Tuberculin Ointment Patch Test, E. Wolff, Am. J. Dis. Child., April, 1934, xlvii, 765.*—(*M. D.*)

Improved Guinea-Pig Test.—This paper confirms the value of Ninni's method of inoculation as compared with the usual methods. The procedure, described in 1930, consists in the injection of 0.1 cc. of suspected material into the paratracheal lymph nodes which have been exposed by a mid-line incision in the neck. The incision is then closed by sutures or clamps. Within 10 to 20 days the inoculated lymph nodes are excised, crushed and examined microscopically for tubercle bacilli. This time period compares favorably with the 5 to 6 weeks of observation that may be required after intraperitoneal or subcutaneous inoculation. Palpable (and usually diagnostic) enlargement of the inoculated lymph nodes occurs in about two weeks as a rule. The author's confirmation of the value of this method is based on procedures carried out with spinal fluid, exudates, sputum and pus, the latter two materials being first homogenized and centrifugated before injection. —*Praktische Bewertung der Ninnischen Experimental-Tuberkulose in der Kinderklinik, V. Mikulowski, Monatsch. f. Kinderhk., July, 1934, lx, 292.*—(*M. D.*)

Capillary Reaction to Tuberculin.—A method is described by which minute amounts of tuberculin are injected between the superficial capillaries on the finger. The injection is done under control of the capillary microscope. Following the injection, oedema develops regardless of the clinical condition of the patient. In all cases the adjacent capillaries are destroyed. In patients who have no clinical tuberculosis or who have a slight productive tuberculosis, the finest capillaries show slight dilatation, but in patients with exudative processes the capillary distention is extreme. This par-

ticular type of capillary reaction is considered to be a causative factor in exudative lesions.—*Über die Reaktionsfähigkeit verschiedener Formen von Tuberkulose auf Tuberkulinreize, K. A. Bock, Beitr. Klin. Tuberk., March, 1934, lxxxiv, 374.*—(*M. P.*)

Superiority of Urea for Demonstrating Tubercle Bacilli.—Three to five parts of a saturated solution of urea made by dissolving 165 gm. of urea in 100 cc. of water at 40°C. are added to sputum, and the mixture is incubated for 30 minutes at 40°C. and brought to 75°C. for 10 to 15 minutes. The homogenized sputum is then diluted with 8 to 10 parts of water and centrifugated. The sediment is placed on a slide upon a dried drop of serum and stained according to the Ziehl-Neelsen method, decolorized with 3 per cent hydrochloric-acid-alcohol, and counterstained 5 to 10 seconds with dilute methylene-blue. When this method was compared with the antiformin method it was observed that the number of sputa containing tubercle bacilli was the same. However, the tubercle bacilli were found to stain better and were more distinct in the urea-concentrated sputa than in the sputa concentrated with antiformin.—*Die vorzügliche Eignung des Doldschen Harnstoffverfahrens zur Anreicherung und zum färberischen Nachweis von Tuberkelbazillen, W. Berthold, Zentralbl. f. Bakt., October, 1934, cxxxii, 458.*—(*J. D. A.*)

Tubercle Bacilli in Blood-Stream.—Employing the method of Loewenstein, Koenig studied the occurrence of tubercle bacilli in the blood-stream of 68 cases of schizophrenia, 4 cases of multiple sclerosis, 29 cases of pulmonary and nonpulmonary forms of tuberculosis and 2 questionable cases of tuberculosis. Tubercle bacilli were found only in one case of tuberculous meningitis. Occasional acid-fast bacilli were found in cultures in 5 cases of schizophrenia, in one case of multiple sclerosis and in 2 cases of manifest tuberculosis. Macroscopic colonies were not visible, but occasional acid-fast bacilli were found upon the surface of the medium. Transplants to fresh medium remained sterile, and in no instance were tuberculous lesions demonstrable in guinea pigs inoculated with material from the primary culture.—*Beiträge zur Züchtung von Tuberkelbakterien aus dem strömenden Blut, H. König, Zentralbl. f. Bakt., Orig., August, 1934, cxxxii, 177.*—(*J. D. A.*)

Diagnosis of Pleural Perforations.—In addition to the well-known clinical means of diagnosing pleuropulmonary perforations it is suggested to add gas analysis. Air in the pleural space rapidly becomes altered in its O and CO_2 content and stays reasonably stable. In the presence of pleuropulmonary fistula the gas in the pneumothorax space more closely resembles atmosphere air in its O and CO_2, and on this fact is based the diagnosis of perforation from gas analysis.—*Pleuro-pulmonary Perforations. The Use of Gas Analysis in their Diagnosis, C. A. Birch, Lancet, May 12, 1934, ccxxvi, 1002.*—(*B. T. McM.*)

Tuberculosis Case-Finding.—When means are limited contact examination is preferable to tuberculin-X-ray surveys of children, but whenever possible the latter method should be employed in high-school pupils. With the decline in tuberculosis incidence and mortality, a controllable minimum appears possible to attain, but the search for sources of infection will become technically more difficult.—*Relative Values in Tuberculosis Case Finding Work, H. E. Kleinschmidt, Am. J. Pub. Health, June, 1934, xxiv, 615.*—(*E. R. L.*)

Tuberculosis Case-Finding.—Case-finding in tuberculosis can be carried out more effectively by concentration on the contacts of known cases, than by the less productive and more expensive method of large-scale examination of school-children. Many investigators have found tuberculosis five to nine times as common in contacts as in the general population. In the author's experience, by concentrating on contacts, 8 cases of adult-type tuberculosis were discovered for every one in the large childhood programs. It must be remembered, also, that in children of grade-school age tuberculosis is usually a benign disease. Twelve times as much clinical tuberculosis was discovered in the author's series among adolescents as children.—*Relative Values in Tuberculosis Case Finding, R. E. Plunkett, Am. J. Pub. Health, May, 1934, xxiv, 511*—(*E. R. L.*)

X-Ray Mass-Procedure in Case-Finding.—It is now generally accepted that tuberculosis may exist and spread for some time in adults before symptoms reach such severity as to lead them to seek medical care. Therefore adequate case-finding in adults cannot depend on patients' own initiative in requesting examination. Such cases can be found only by examination of groups of apparently healthy persons. Industrial groups are ideal for such an attack. Methods of physical diagnosis have proved inadequate in such groups, but routine X-ray examination has been successful. The introduction of paper X-ray "film" has made it possible to take pictures at the rate of 150

per hour. The results of a survey of 20,000 individuals from the Home Relief in New York City in 1933 are reported. Twelve and three-tenths per cent were diagnosed definite, suspected or healed tuberculosis, including a large number of minimal cases. Seven hundred and fifty-two cardiac lesions were also discovered.—*X-Ray Mass-Procedure Applicable for the Discovery of Early Tuberculosis in Industrial Groups, Margaret Witter Barnard, Amer. J. Pub. Health, January, 1934, xxiv, 8.*—(*E. R. L.*)

Primary Tuberculosis of Mouth.—The author has seen 10 cases of tuberculosis of the cervical lymph nodes in which the primary lesion was observed on the gum or tonsil. This is usually in the form of a small granuloma which may be only a few millimetres in diameter; the lesion soon ulcerates and is completely healed within about 3 weeks, unless secondary infection occurs. This primary lesion may be unrecognized because of the mild or absent local symptoms, and because it is present only during the early stages of the swelling of the regional (cervical) lymph nodes.—*Über Verlaufsarten der extrapulmonalen Primärtuberkulose, J. Duken, Ztschr. f. Kinderhk., December, 1933, lv, 687.*—(*M. D.*)

Prognosis of Tuberculous Laryngitis.—Laryngeal tuberculosis is but a complication of pulmonary phthisis, and the prognosis therefore depends primarily on the extent, severity and progress of the pulmonary disease and secondarily on the situation and extent of the laryngeal lesions. If the lesions in the lungs are in a curable stage the cure of the larynx is nearly always possible, and is probable if the laryngeal affection is not far advanced. The condition of the larynx can, and not infrequently does improve while the disease in the lungs is progressing, but the lungs never get better while the laryngeal disease is advancing. Pregnancy has a particularly bad effect on tuberculous laryngitis. Superficial infiltrations or ulcerations of the vocal cords offer the most favorable lesions, and with similar lesions or papillary outgrowths in the posterior commissure the prognosis is also fairly good. Infiltration at the upper aperture is far more serious than disease within the larynx; partly because it is of greater mass and extent, partly because it usually occurs when the interior of the larynx is already involved, but chiefly because it so often causes dysphagia. This is especially true of disease of the epiglottis, which is of the worst prognostic import unless the infiltration is small. The larynx is far more prone to invasion when the pulmonary disease is advanced; hence the percentage of cases of arrested laryngeal disease is materially diminished by the large proportion which occurs in the late stage of phthisis where there is no prospect of recovery. In these cases it is not the disease in the larynx which causes death. The percentage of recoveries is now on the increase due to earlier diagnosis and improved methods of treatment, both of the lungs and the larynx.—III. *Tuberculous Laryngitis (Prognosis), H. Barwell, Lancet, April 21, 1934, ccxxvi, 861.*—(*J. S. W.*)

Actinotherapy for Peritoneal and Laryngeal Tuberculosis.—Tuberculous peritonitis can be successfully treated with light therapy when combined with the usual hygienic and dietetic measures. An effort should be made to obtain at least a second-degree erythema of the whole skin surface treated in sections, the whole area being gone over within a week. The application should be begun carefully to avoid depressing the patient. The treatment should be continued until the skin is deeply tanned. With the carbon-arc lamp it has been found that about 80 per cent of uncomplicated cases and 60 per cent of complicated cases will recover from their tuberculosis. The cases most amenable to treatment are those of the plastic adhesive type, in which there is localized peritonitis, especially of the caecoappendicular, hepatic and splenic regions. Cases with effusion usually do not respond quite so well, and the ulcerative and caseous types are the least satisfactory. Cases refractory to treatment frequently show improvement following the conjoint use of infrared, ultraviolet and roentgen rays. Where the mercury-vapor lamp alone has been used, improvement often results by substituting the carbon-arc for it. Laryngeal tuberculosis is treated with the Kromayer lamp with laryngeal applicator or the special throat quartz lamp to give direct irradiation of the diseased area. A visible erythema is usually produced in from one to two minutes. In cases of dysphagia the blue filter is used. Treatment is repeated once a week, the exposure increasing gradually to ten minutes. The mercury-vapor lamp, giving general body baths, is also used.—*A Review of the Treatment of Peritoneal and Laryngeal Tuberculosis by Ultra-Violet Radiations, A. Furniss, Brit. J. Tuberc., April, 1934, xxviii, 71.*—(*J. S. W.*)

Tuberculosis of Chest-Wall.—Tuberculosis of the thoracic wall, although not a grave condition, is extremely resistant to treatment. More or less complete details of the treatment of 32 cases are given. The most satisfactory therapy is the resection of

all involved soft and skeletal tissue. Less radical treatment gave poorer results, and simple incision and drainage proved to be of no avail, since none of the 5 patients so treated is healed. In one case aspiration alone was performed and the abscess did not recur. There seemed to be no direct relationship between the severity of the tuberculous lesions elsewhere. No one of these cases when first seen was a simple early case.—*Tuberculosis of the Thoracic Wall, D. Carr & J. Alexander, J. Thoracic Surg., April, 1934, iii, 380.*—(*J. F. B.*)

Calcification of Pleura.—The present paper is a record of 14 cases of calcification of the pleura seen by the author and 59 collected from the literature. This disease is as old as tuberculosis and haemothorax, the two conditions which commonly cause it. In 17 of the cases the lesions followed gunshot wounds. Twenty-nine cases had either active or healed tuberculosis or had had pleurisy with effusion or severe pleurisy, diseases which can be assumed to be tuberculous in origin. Formerly the disease was thought to be the result of chronic non-tuberculous empyema as it was rarely associated with active phthisis. From a study of the cases in this series the clinical picture of calcification of the pleura can be summarized as follows: The acute symptoms of tuberculous pleurisy with effusion or of traumatic haemothorax abate without complete absorption of the pleural fluid. As this substance is slowly absorbed, the calcium in it is precipitated or dialyzed out and deposited on the pleural surface. This encrusting of the surface of the lung may take place before this organ is completely reëxpanded, in which case its partial collapse is made permanent by the rigid mold enclosing it. In other cases the lung fully reëxpands and the calcium is left as a layer interposed between the visceral and parietal layers of the pleura. In many instances there are no symptoms referable to this condition. In others there are pain, cough and dyspnoea or all of these symptoms and a marked immobility and retraction of the affected hemithorax. The condition is recognized by the roentgen-rays. In a certain number of cases the pleural cavity or the layer of calcium between the two pleural surfaces becomes infected, and if this occurs the calcium acts as a foreign body and maintains a chronic infection. The treatment is the same as that of chronic empyema, save that all of the calcium must be removed. As a prophylactic measure all cases of traumatic haemothorax and serothorax, and tuberculous pleurisy with effusion should be carefully followed and aspirated if absorption is not rapid.—*Calcification of the Pleura, J. Head, Ann. Int. Med., April, 1934, vii, 1295.*—(*J. S. W.*)

Tuberculosis of Gall-Bladder.—Tuberculosis of the gall-bladder is rare, there being only 20 cases on record, including the case presented. Eleven of the cases are substantiated by histological study. There appear to be two types of infection: a chronic ulcerative form with or without stone, primary or associated with a tuberculous focus elsewhere in the body; and an acute type involving the mucous membrane, representing a feature of generalized miliary tuberculosis. There were no characteristic symptoms except those of cholecystitis with or without stone. The pain was boring or pressing in character, usually aggravated by food. Vomiting and jaundice were rare. All cases where sex was mentioned, except one, were females. Loss of weight and anorexia were frequent symptoms. The most outstanding physical sign was a tender tumor in the right hypochondrium. The youngest case recorded was nine months old and the oldest seventy-two years, with four in the fourth decade and five in the fifth. The diagnosis in all cases was made at operation or postmortem. If possible, cholecystectomy is the procedure of choice, otherwise cholecystostomy. Postoperative complications are fistula and tuberculous peritonitis. —*Tuberculosis of the Gall Bladder, J. A. Lazarus & A. A. Eisenberg, Amer. Jour. Surg., April, 1934, xxiv, 166.*—(*L. F. B.*)

Tuberculous Mesenteric Lymphadenitis.—X-ray studies were made of the abdomen on a group of children, including 70 with a history of anorexia, listlessness, fatigue, and loss of weight. Of these over 50 per cent had evidence of calcified mesenteric lymph nodes, usually in the right lower quadrant. They all had a secondary anaemia and complained characteristically of localized pains in the abdomen of sudden onset and brief duration, presumably due to adhesions. Clinically this benign form of isolated mesenteric tuberculosis is usually overlooked, although calcified mesenteric lymph nodes have been frequently observed during operative or postmortem exploration of the abdomen.—*Über die sogenannte isolierte Mesenterialdrüsentuberkulose und die Bedeutung ihres röntgenologischen Nachweises, E. A. Voss, Monats. f. Kinderhk., September, 1933, lix, 45.*—(*M. D.*)

Splenic Extract in Surgical Tuberculosis.—Twenty children with acute tuberculosis of the hip or spine, being conservatively treated, were selected. Ten acted as experimental subjects and were matched as

carefully as possible with the other ten as controls. The two groups were given the same general care except that the experimental group received one teaspoonful of splenic extract three times a day. Each case was thoroughly examined every six weeks, blood and urine examinations made weekly, and X-ray films were taken at two month intervals. Comparison of the experimental and control groups at the end of one year showed the experimental group to have averaged a little less gain in weight, and there was no essential difference in the blood picture. By X-ray, one of the cases was definitely better than its control, seven were essentially the same, and two worse than their controls. Exhibited to a group of orthopaedic surgeons, to whom the cases were unknown, essentially the same conclusions were reached. As nearly as could be determined the addition of splenic extract to the diet had no effect on the course of the disease.—*The Treatment of Surgical Tuberculosis with Splenic Extract, J. S. Barr, Jour. Bone & Joint Surg., January, 1934, xvi, 173.*—(*L. F. B.*)

Operation for Pott's Disease.—The surgical treatment of Pott's disease as adopted to-day does not differ fundamentally from the object of nonsurgical measures, and the literature on radical procedures shows a series of unsuccessful attempts made by various writers. For a total resection of a vertebra the following method has been developed. For disease of the lumbar vertebrae a left pararectal incision is usually made in order to avoid injury to the aorta and inferior vena cava. The peritoneal fold containing the abdominal viscera is retracted toward the midline and the retroperitoneal space reached by blunt dissection. Further dissection exposes the bodies of the vertebrae. The anterior longitudinal ligament is divided in the direction of its fibres, and granulation tissue and sequestra are scraped out with a sharp curette. As much solid bone forming the wall of the lesion as is deemed necessary is removed with a chisel. The anterior longitudinal ligament is sutured and the abdomen closed. A complicating abscess is aspirated prior to operation, any remaining pus being aspirated under direct vision. The abscess-cavity is closed airtight, close to the curetted body of the vertebra. For disease of the first lumbar and twelfth dorsal vertebrae an oblique skin incision similar to Bergmann's for nephrectomy is used. The bodies of the dorsal vertebrae are reached by a costotransversectomy, removing sections of at least three ribs. For repair, Albee's technique of immobilization was found satisfactory in relieving the diseased vertebrae of weight-bearing but was a definite drawback in that it required a second operation. For this reason a tibial graft or section of rib was implanted into a groove made in the bodies of the adjacent healthy vertebrae. Of the 10 cases reported on which this technique was used, all except two healed by first intention. The two cases developed fistulae, one of which closed spontaneously early and the other gives evidence of closing. Symptoms in all cases were relieved. No occurrence of or increase in an existing kyphus occurred whether Albee's method or bone transplant into the bodies of the vertebrae was used.—*A New Radical Operation for Pott's Disease, H. Ito, J. Tsuchiya & G. Asami, Jour. Bone & Joint Surg., July, 1934, xvi, 499.*—(*L. F. B.*)

Tuberculous Knee Resembling Charcot's Disease.—A man of 40 years with tuberculosis of the spine and sternum had also some involvement of the left knee of ten years' duration. The knee showed a spindle-shaped enlargement, with a diffusely thickened capsule but without effusion. There was marked posterior and lateral subluxation and about 20 degrees flexion. A small amount of rocking motion in all directions was permissible. There was no tenderness on palpation, motion, or walking and no scars or sinuses. Cerebrospinal fluid and blood Wassermann tests were negative. X-ray films had the appearance of Charcot's disease. The knee was resected to produce ankylosis and material obtained at this time was reported positive for tubercle bacilli by guinea-pig inoculation.—*A Case of Tuberculous Infection of the Knee with Clinical and Roentgenographic Appearance of Charcot's Disease, K. Bennet & H. Hinricson, Jour. Bone & Joint Surg., April, 1934, xvi, 463.*—(*L. F. B.*)

Tuberculosis of Shaft of Long Bones in Chinese.—Although tuberculosis of the shaft of the long bones of the extremities is reported as rare in Occidentals, attention has not been called to its more frequent occurrence among the Chinese. Thirty-eight cases, 4.8 per cent of 786 bone-and-joint tuberculosis cases, have been seen at the Peiping Union Medical College during the past 12 years. Twenty cases are here reported. From the various types of lesions found, tuberculosis of the shaft may simulate pyogenic osteomyelitic lesions, and it is believed the mode of infection in either condition is the same. Although the reaction of almost any type of pathogenic bacterium may be duplicated, the lesions are usually characterized by bone destruction, especially when

cancellous bone is involved. In the group of cases studied the symptoms differed in severity in accordance with the virulence of infection and the extent of the lesion. Massive tuberculous infiltration of the shaft might easily be mistaken for an acute pyogenic infection. When the periosteum was involved, the newly formed bone appeared, by X-ray, irregularly rarefied and striated longitudinally. When the cortex was involved, it showed thickening, usually of the rarefying type, with a laminated appearance, and usually with single or multiple areas of erosion or destruction. Based largely on location and extent, the lesions have been divided into 4 types according to X-ray appearance. (1) Tuberculous periostitis, the rarest; (2) solitary tuberculous abscess of the Brodie type, usually a single area of destruction and usually centrally located in or near the metaphysis; (3) localized tuberculous osteomyelitis, similar to type (2) but with a larger portion of the shaft involved; and (4) massive tuberculous osteomyelitis. About 75 per cent of the uncomplicated cases responded favorably to the usual orthopaedic care. Lesions without sinuses were unroofed and as much of the diseased bone and soft tissue as feasible were removed. Cases with sinuses were treated in much the same manner as a pyogenic osteomyelitis, following the technique of Orr. In many cases, secondary infection appeared to have a favorable influence.—*Tuberculosis of the Shaft of the Large Long Bones of the Extremities, C. K. Hsieh, L. J. Miltner & C. P. Chang, Jour. Bone & Joint Surg., July, 1934, xvi, 545.*—(*L. F. B.*)

Tuberculosis of Metatarsal Bone.—Report of a case involving the first metatarsal, treated by excision of the major portion of the bone. There was no recurrence after two years and no difficulty was experienced in using the foot.—*Tuberculosis of Metatarsal Bones, P. E. McMaster & R. W. King, Jour. Bone & Joint Surg., January, 1934, xvi, 202.*—(*L. F. B.*)

Tuberculosis of Skeletal Muscles.—A tuberculous process may involve the muscles by direct extension or be carried to them by way of the blood-stream. Four general types have been described as fungoid, nodular, cold abscess and sclerosing myositis. Several inadequate attempts have been made to explain the infrequency of skeletal-muscle involvement, such as lactic-acid production by the muscle, lack of reticuloendothelial tissue, lack of lymphatic tissue, abundant blood-supply, the highly differentiated state of muscle-tissue and the possible presence of antitoxin bodies. The earliest pathological change takes place in the walls of the blood-vessels and in the interstitial tissue. Extensive spreading is usual. Muscle fibres suffer from compression and simple atrophy. Sex and age are not predisposing factors, although adults in the third and fourth decades are most frequently affected. Clinically, haematogenous tuberculosis of the muscle is most often mistaken for sarcoma. The disease is chronic and generally progressive and the prognosis depends upon the severity of the coexisting tuberculosis, number and distribution of lesions and the therapy. Excision is the procedure of choice.—*Hematogenous Tuberculosis of Skeletal Muscle, W. W. Plummer, S. Sanes & W. S. Smith, Jour. Bone & Joint Surg., July, 1934, xvi, 631.*—(*L. F. B.*)

Tuberculosis of Kidney.—During the years 1896–1932 nephrectomy was performed at Sonnenrain, Basel, on 341 patients with renal tuberculosis. Of these, 157 were men and 183 women. A survey of the subsequent clinical course of these patients was made in 1932. The time-interval between operation and follow-up ranged from a few months to more than thirty years. Information was obtained in all but one case, which was lost sight of one year after operation, when the patient was considered cured. Of the 340 patients, six died shortly following operation. One hundred and twenty-seven patients, or 37.3 per cent, died some time after initial recovery from nephrectomy; 207 patients were still living, 59 men and 108 women; 167 were well, and, of these, 40 were either unimproved or somewhat improved. Thus the prognosis is a little better for women than for men. The outcome is ordinarily good in instances of isolated renal tuberculosis, less good when the bladder is seriously involved, or when there is a complicating tuberculosis of the genital tract. In males surviving the operation, genital tuberculosis was present in 71 per cent of the cases, and in those who died the percentage was little different, 77 per cent. Renal disease was the cause of death in 63 of the 127 patients who died, and a tuberculous infection of the remaining kidney was present in 49 instances. Non-renal tuberculosis led to exitus in 38 cases. Hence, tuberculosis was responsible for the death of 101 patients of the 127 patients who died after recovery from operation. The importance of making an early diagnosis of a tuberculous infection in one kidney is matched only by the necessity of proving, before undertaking nephrectomy, the integrity of the second kidney. To verify the presence of a tuberculous renal focus, one must demonstrate the organism in urine coming from the apparently infected kidney,

and one must find corroborative evidence by cystoscopic examination and ureteral catheterization. Pyelograms and symptomatology are helpful, but not diagnostic. To establish that a tuberculous focus is absent in the second kidney is more difficult, particularly in those instances where only small tuberculous foci are present. As criteria, the following may be taken as essential; the urine collected from the corresponding ureter must contain no tubercle bacilli, and laboratory animals inoculated with the sediment from this urine must not develop inoculation tuberculosis; cystoscopic examination must reveal normal findings on the side in question; functional renal tests of this kidney must fall within a normal range; and, finally, the urine secreted by this kidney must be free of abnormal constituents. Although, in postoperative cases of renal tuberculosis, the high mortality rate is due to infection of the second kidney in almost one-fourth of the cases, it is not known what fraction thereof is due to a missed focus already present in the second kidney at time of nephrectomy, and what fractions to ascending infection from the urogenital tract or to metastatic infection from tuberculous foci elsewhere in the body. The finding in this study of an approximately equal percentage of deaths from renal tuberculosis among men and women following nephrectomy is of interest in establishing the fact that genital tuberculosis in the male plays no special part in infecting the second kidney with tuberculosis. —*Bericht über 341 wegen Nierentuberkulose Nephrektomierte, F. Suter, Schweiz. med. Wchnschr., July 14, 1934, lxiv, 668.*—(*V. T.*)

Renal Tuberculosis.—A sharp distinction must be made between urinary tuberculosis, which starts in the kidneys and may extend to other parts of the genitourinary tract, and clinically primary genital tuberculosis; these are different diseases and run a different course, requiring different treatment. Primary tuberculosis of the bladder has never been seen by the author. In 92 per cent of the cases of urinary tuberculosis the disease is confined to one side at the start. Before extension to the other kidney occurs symptoms may be few, and even absent, although the entire kidney be destroyed. By the time bladder symptoms appear, kidney disease is usually advanced. Patients suffering from renal tuberculosis are, as a rule, in good general condition and, when evidences of general constitutional disturbances are present, complications are almost invariably present, such as tuberculosis in other organs or uraemia. The indigo-carmine test is of great aid in the diagnosis, even in unilateral early disease. Uroselectan has greatly advanced the ease of diagnosis and has practically superseded ascending pyelography. Since the end of the last century the mortality from nephrectomy has been reduced from 25 to 2.5 per cent, largely because of improved methods for examining the function of the other kidney. Because of flaws in technique in the passage of the catheter the healthy kidney may be erroneously condemned as tuberculous. The treatment for unilateral tuberculosis of the kidney is nephrectomy, but, since the operation is not an emergency one, it is of extreme importance to build up the patient's general health before operating. In the author's opinion a normal kidney does not excrete tubercle bacilli, nor have these organisms been found by careful examination in cases of nontuberculous nephritis. It is probable that renal tuberculosis can heal as it does in other parts of the body, but when patients appear for diagnosis the bladder is almost invariably involved and by that time considerable destruction has probably occurred in the kidney, with resultant cavity formation. Since collapse of the cavity cannot occur, as, for example, it does in the lung, healing is quite unlikely. There are probably some cases of renal tuberculosis in which conservative treatment rather than nephrectomy may be advisable: of the 365 cases observed, 12 were considered as such. Wildbolz, from a study of nephrectomies performed ten years previously, found 59 per cent alive; of those cases upon whom operation was not performed 57 per cent died within five years. It is important that operation be not performed soon after examinations which are often very trying to the patient. After operation sanatorium treatment should be carried out for at least 6 months. A surprising finding in the author's experience was that many of the very early cases of renal tuberculosis did not do well; the theoretical explanation for this may be that in these cases the disease has not been present long enough to allow a generalized tissue or blood antagonism against tuberculosis to develop, so that, following operation, bacilli carried to various parts of the body by the blood-stream lodge in unprotected soil and set up fresh disease. The conclusion is arrived at that it is bad surgery to try to cure by nephrectomy a patient with early tuberculosis. Genital tuberculosis is in a confused state with regard to its pathogenesis. In men it is common for the urinary and genital tracts to be involved at the same time; in women combined lesions are rare. Tuberculosis of the testis may begin acutely but usually it begins insidiously, in the epididymis. Except in virulent cases seen at puberty, primary tuberculosis of the prostate or the seminal vesicles is rare.

Because of the frequency of generalized spread following removal of the testis, some have advised only removal of the epididymis since it was felt that loss of the testicular hormone might be responsible for the spread. There is much diversity of opinion as to the best mode of treatment but most surgeons recommend conservative treatment, since orchidectomy or epididymectomy seem to have no effect on the spread of the disease. However, if an operation is indicated, complete orchidectomy is preferred to epididymectomy alone. The importance of sanatorium care, with local rest by supports, is stressed. Removal of a tuberculous testis may be followed by disastrous results; the removal of a tuberculous kidney is often followed by good results. The explanation for this difference lies in the long-standing character of the renal lesion, which has set up defense mechanisms in the rest of the body before the diagnosis and operation are accomplished.—*Some Points in the Treatment of Genitourinary Tuberculosis, T. E. Hammond, Surg., Gynec. & Obstet., April, 1934, lviii, 745.*—(*B. B.*)

Tubercle Bacilli in Urine.—The question is raised as to the significance to the practitioner of the finding of tubercle bacilli in the urine of tuberculous patients in whom frank signs of tuberculous infection of the renal or genital tract are lacking. Evidence is presented against the concept of a simple excretion of tubercle bacilli by an undamaged kidney. The finding of tubercle bacilli constitutes proof of a tuberculous focus somewhere in the genitourinary tract, and a thorough study, including cystoscopic examination and ureteral catheterization, should be instituted. Pyelograms are helpful in corroboration, but they are inadequate by themselves to establish a diagnosis.—*Was bedeutet für den Praktiker der Befund von Tuberkelbazillen im Harne eines Kranken?, H. Wildbolz, München. med. Wchnschr., July 6, 1934, lxxi, 1012.*—(*V. T.*)

Tuberculosis of Central Nervous System.—Active tuberculous infection of the central nervous system, associated with the presence of tubercle bacilli in the cerebrospinal fluid, does not necessarily proceed immediately to progressive and fatal meningitis. Three instances are reported in which cerebrospinal fluid taken by lumbar puncture from three children produced tuberculosis in guinea pigs. In none of these children was the clinical picture that of meningitis and in none was the outcome fatal. The cerebrospinal fluid was chemically and cytologically normal. The findings in these three cases add strength to the theory of Rich and McCordock that tuberculous meningitis is secondary to a preëxisting tuberculous focus in the brain or meninges. In the light of these findings it is necessary to recognize that any clinical evidence of meningeal irritation or cerebral lesion, no matter how slight and transient, in a patient in whom the tuberculin reaction is positive, may be an indication of tuberculous infection of the central nervous system, even in the absence of clinically active tuberculosis elsewhere in the body, and of any definite cytological or chemical abnormality in the cerebrospinal fluid.—*Three Cases of Tuberculosis of the Central Nervous System in Children. Apparent Clinical Recovery, A. R. Macgregor, H. J. R. Kirkpatrick & W. S. Craig, Lancet, July 7, 1934, ccxxvii, 18.*—(*B. T. McM.*)

Tuberculoma of Spinal Cord.—Tuberculoma may develop within the substance of the cord itself (intramedullary form), or within the spinal canal external to the cord (extramedullary form). The following report is of a case of intramedullary tuberculoma, the only tuberculoma observed among 5,344 patients. A white woman, age 27, was admitted to the Glen Lake Sanatorium (Minnesota) in October, 1930, with far-advanced pulmonary tuberculosis. In February of the next year the patient complained of some pain in the left sacroiliac region which radiated down the lateral aspect of left thigh. There was some difficulty in motion and a feeling of numbness in the whole extremity. Later, obstinate constipation developed. In April the presence of a spinal-cord tumor was suspected. In May the right lower extremity had become involved as completely as the left, and control of the anal and vesical sphincters had been lost. The patient died in June. The autopsy showed tuberculosis of the lungs, intestines and kidneys. On section of the cord at the level of the fourth lumbar segment a tumor was found. The growth was elliptical in shape and measured 2.0 by 0.9 cm. It appeared to be entirely intramedullary and had replaced almost all of the cord tissue. Microscopically the tumor proved to be tuberculous and showed the presence of giant cells and tubercle bacilli.—*Tuberculoma of the Spinal Cord, F. L. Jennings, Ann. Int. Med., April, 1934, vii, 1244.*—(*J. S. W.*)

Tuberculoma of Brain.—In an analysis of 757 autopsies performed at the Cook County Hospital from 1917 to 1927, inclusive, on patients who died of tuberculosis, tuberculoma of the brain was observed twenty times. In the majority of these cases the symptoms indicated the presence of men-

ingitis. In seven the clinical diagnosis of tuberculous meningitis was made. In two instances tuberculoma of the brain was diagnosed. At autopsy meningitis was found in 17 cases; in one case a focal meningitis was reported; and in two cases the meninges did not show any involvement. The clinical signs and symptoms of meningitis frequently masked the tumor syndrome which may be presented by these cases. The average age in these 20 cases was 22.7 years: it was a predominantly adult group. Nearly one-half (45 per cent) of these cases showed the presence of more than one tuberculoma. All parts of the brain seem equally subject to the development of tuberculoma. Tuberculous foci in other parts of the body were uniformly present.—*Tuberculoma of the Brain, M. Lewison, E. B. Freilich & O. B. Ragins, Ann. Int. Med., March, 1934, vii, 1141.—(J. S. W.)*

Tuberculous Meningitis of Human and Bovine Origin.—This inquiry was made to determine the relative incidence of human and bovine types in tuberculous meningitis. The material used in the investigation was principally cerebrospinal fluid withdrawn by lumbar puncture during the life of the patient. In a few cases of tuberculous meningitis material from autopsies was investigated in addition to spinal fluid, and in 8 cases postmortem material only was used. The results are given of typing the strains of tubercle bacilli obtained from a new series of 188 cases of tuberculous meningitis collected during the period from December, 1931, to December, 1933. Of this number 48 (25.5 per cent) were due to bovine bacilli and 140 (74.5 per cent) to human bacilli. The cases were derived from widely separated localities in England and Scotland. The number of English cases was 151, of which 33 (21.8 per cent) were bovine infections. The number of Scottish cases was 37; of these, 15 (40.5 per cent) were due to bovine bacilli. Including the 63 cases previously reported the total number of English cases investigated is now 214. Of these, 52 (24.3 per cent) were caused by bovine bacilli and 162 by human bacilli. The percentages of bovine infections at different age-periods (English and Scottish figures combined) are as follows: 0 to 4 years, 31.3; 5 to 14 years, 23.3; 15 to 24 years, 26.3; and 25 years and over, 10.0. The bovine cases were widely distributed and varied greatly in proportional frequency in different localities, country places and small towns, in general, giving higher percentages than the cities.—*Incidence of Human and Bovine Bacilli in Tuberculous Meningitis, A. S. Griffith, Lancet, June 30, 1934, ccxxvi, 1382.*—(*B. T. McM.*)

Miliary Tuberculosis.—Formerly it was thought that only acute generalized miliary tuberculosis resulted when a tuberculous focus ruptured into a blood-vessel with the production of a tuberculous bacillaemia. Now it is known that certain other tuberculous manifestations may follow a tuberculous haematogenous spread. With the escape of a few organisms from the ruptured focus, isolated lesions may appear in distant organs including the lungs. In infants and laboratory animals a more massive tuberculous bacillaemia, or successive tuberculous bacillaemias may lead to foci rapidly progressing to frank caseation. Under certain given conditions, on the other hand, a similar haematogenous tuberculous spread may produce relatively benign tuberculous lesions, such as tuberculides. Or, finally, on the other hand, the same type of haematogenous spread may lead to the clinical syndrome of acute generalized miliary tuberculosis. Thus, the determining factor must lie in the difference in the response of the tissues of the infected organism to the tuberculous haematogenous invasion. In short, the diversity of resulting clinical manifestations produced by the same aetiological stimulus is dependent on the state of allergy of the tissues of the infected organism at the time of the haematogenous tuberculous spread. Miliary tuberculosis bespeaks a definite type of allergy, in which the reactivity of the infected organism to the tubercle bacillus is so altered that it responds to the stimulus of the presence of the tubercle bacillus with the formation of a special sort of tuberculous tissue. Similarly the explanation of the other clinical pictures following as a sequence on a tuberculous haematogenous spread is found in the type of tissue reactivity to the invading tubercle bacillus. Generalized acute miliary tuberculosis continues to be a grave condition. Although in rare instances a case may recover, or the patient may survive for many years with a so-called chronic miliary tuberculosis, the percentage of mortality still lies far closer to 100 per cent than to 99 per cent. The diagnosis of this condition has been facilitated by the use of X-rays. However roentgenograms do not constitute an absolute diagnostic certainty, inasmuch as the X-ray plates of other pathological conditions may simulate those of acute miliary tuberculosis.—*Ueber allgemeine akute Miliartuberkulose, R. Staehelin, München. med. Wchnschr., May 25, 1934, lxxxi, 780.*—(*V. T.*)

Need for Care and After-care Organization.—A survey of 262 cases from the 535 notified between 1927 and 1932, showed that 134 had died. Of the 262 cases, 46

failed to receive sanatorium treatment, the principal reason being "temperamentally unsuitable" or the need to support a family. Out of 172 cases, 92.4 per cent were hospitalized three months or less, the need for family support accounting for 25 per cent of the early discharges. The homes of over half the group were overcrowded or otherwise unhygienic, and, because of low finances, adequate food was not available in almost half of them. The habits of 71 cases were unsatisfactory, either because their stay in the sanatorium was too short to learn proper sanitation or the home conditions were such that sanatorium principles could not be carried out. Fifty-five of the 128 cases still living were not receiving adequate sanatorium care, and domestic problems accounted for about three-fourths of these cases. It is obvious that domestic difficulties play an important part in the absence or insufficiency of sanatorium treatment. In spite of the present depression much could be done to ameliorate these conditions by a care and after-care committee.—*The Need for Care and After-care of the Tuberculous, J. A. G. Keddie, Jour. State Med., March, 1934, xlii, 149.*—(*L. F. B.*)

Sanatorium Industrial Villages.—At Papworth and Preston Hall, healthy young adults work, without any apparent harm, side by side with open cases of pulmonary tuberculosis. This resistance to infection is explained by the elimination of factors that tend to produce the disease and the emphasis placed upon the factors that tend to raise the resistance.—*Some Aspects of the Work of the Sanatorium Industrial Villages of Papworth and Preston Hall, N. Bardswell, Tubercle, April, 1934, xv, 292.*—(*T. O. R.*)

Dry Air for Removal of Fluid from Bronchioles.—Dry air is capable of removing signs of fluid from the bronchioles and alveoli in cases of bronchitis. This action reduces the pressure in the lungs and thus relieves the cardiac musculature. The solid materials can be removed later by the administration of alkalis. The dry air does not, however, prevent the further passage of fluid into the air-passages after the termination of the treatment. To give the heart muscle comparative periods of rest in which to recuperate, dry air should be administered frequently over a prolonged period perhaps of days or weeks. The duration of each administration should be of some hours and at least 0.1 cubic foot of dry air per minute should be given. The dry air is best administered through a small rubber catheter placed well back in the nares. Dry air can be obtained in cylinders from firms who supply compressed gases.—*Dry Air for Removal of Fluid from the Bronchioles and Alveoli, G.deM. Rudolf, Lancet, February 10, 1934, ccxvi, 284.*—(*J. S. W.*)

Chemical Destruction of Periosteum.—The greatest difficulty in obtaining recovery from tuberculous postpneumothoracic fistulous empyema is encountered in the abolition of the suppurating cavity. Theoretically, resection of the thoracic wall by the method of Schede is the most promising, but this operation is too severe for many patients. The Estlander procedure allows the operator to stay away from the infected pleura and is a more nearly correct operation, but it does not always give the best results, since ribs are regenerated before the empyema cavity is completely obliterated. However, a combination operation, removal of the maximum length of rib and painting the periosteal bed generously with Zenker's solution, has given more or less uniformly satisfactory results. This report is based on an experience gained in 50 cases.—*The Chemical Destruction of Periosteum in the Treatment of Chronic Empyema, A. Jachia, J. Thoracic Surg., August, 1934, iii, 623.*—(*J. F. B.*)

Abdominal Supports in Tuberculosis.—In order to obtain further data on the subject of mechanical influences in pulmonary tuberculosis, careful studies were made of the chest, diaphragm and abdominal movements in patients of different weight-levels and suffering from various respiratory diseases. Since it was found that abdominal breathing was the rule in pulmonary diseases, and that in thin patients during coughing there was marked general retraction of the abdominal wall followed by rapid expansion caused by the sudden rebound of the diaphragm, the effect of abdominal supports to limit the lung motion in the vertical plane was tried. The type of support varied with the type of patient. For the well-developed abdomen a heavy broadcloth, somewhat diamond-shaped, front piece equipped with stays was buckled to the back-piece, while for thin abdomens the stays were bent inward at the middle. The pendulous abdomen required an aluminum plate in the front piece and the fat pushed up above the belt. Patients requiring considerable pressure because of dyspnoea and cough were fitted with a four-leaf-clover-shaped aluminum plate, which gave increased pressure over the abdomen by springs between it and the stays which fasten in the back. The 41 patients studied included 23 cases of chronic bronchitis, bronchiectasis, asthma and emphysema, and 18 cases of pulmonary tuberculo-

sis with considerable fibrosis. They had been on standard treatment from six months to more than 4 years previously, and no other change was made in treatment except to discontinue unimportant procedures. Of the 18 who showed marked improvement, 7 were tuberculous. In 4 tuberculous patients one large cavity disappeared, and 3 decreased more than 2 cm. in diameter. The patients appeared more comfortable and had less dyspnoea, cough, expectoration, fatigue and abdominal pain. The elevations of the diaphragm were 1 to 3.5 cm., and the excursions were limited especially on coughing. Discomfort occurred in 4 patients, and 3 tuberculous patients had a questionable extension of the lesion, requiring removal of the supports. Abdominal supports give symptomatic relief, and in some cases cause healing. They also give some idea of what would be accomplished by bilateral phrenic nerve surgery.—*The Mechanism and Use of Abdominal Supports and the Treatment of Pulmonary Diseases, B. Gordon, Am. J. M. Sc., May, 1934, clxxxvii, 692.*—(*E. M. J.*)

Hepatic Function during Sanocrysin Treatment.—Injections of sanocrysin give rise to injury of the liver parenchyma, as determined by the Erhlich and Hay tests on the urine. These reactions appear one to two days after injection. There were 4 cases of pulmonary tuberculosis, 12 cases of polyarthritis, 1 case of rheumatic fever, 1 case of erythema nodosum and 1 case of lymphogranulomatosis in the study. In general, the Ehrlich reaction subsided one to two days after the injection of sanocrysin. The Hay test became negative after the first 3–4 injections and then after 4–5 injections became and remained positive for weeks.—*Sanocrysin Problems. XII. Liver Function during Sanocrysin Treatment, G. Josephsen, Acta Tuberc. Scandinav., Fasc. 1–2, 1934, viii, 145.*—(*F. B. S.*)

Thrombopoenia during Sanocrysin Treatment.—In 600 tuberculous patients only one case of thrombopoenia was observed after treatment with sanocrysin. Three cases of arthritic joint affections which showed serious haemorrhage following similar treatment with sanocrysin are discussed in detail. The size of the dose was not decisive. Counts of the blood platelets were made in many more patients and a fall in the number of platelets was quite common. Blood transfusion is the only truly effective therapy when an unsafe degree of thrombopoenia is ascertained by means of the platelet count.—*Sanocrysin Problems. XI. Thrombopoenia during Sanocrysin Treatment, K. Secher, Acta Tuberc. Scandinav., Fasc. 1–2, 1934, viii, 120.*—(*F. B. S.*)

Red-Cell Sedimentation Test during Sanocrysin Injections.—Injections of sanocrysin in 15 cases of various types of tuberculosis caused no increase in the sedimentation rate, in comparison with the rise in rate usually experienced following *Reiz* therapy or injections with *sulfusin*. In 4 cases of typical erythema-exanthema there was no relation between the degree of severity of skin reaction and the increase in sedimentation rate.—*Sanocrysin Problems. X. Studies on the Sedimentation Test in Connection with Sanocrysin Injections, G. Herborg, Acta Tuberc. Scandinav., Fasc. 1–2, 1934, viii, 131.*—(*F. B. S.*)

Debacillation in Pulmonary Tuberculosis by Sanocrysin.—The study includes adult cases with positive sputum subjected to the treatment in the period of 1926–1931. Contraindications for treatment were pronounced weakness, albuminuria and symptoms strongly indicative of intestinal tuberculosis. The material includes 369 cases, 171 of which were productive and 198 exudative. Only 24 cases, according to the radiological classification of Strandgaard, belonged to the primary stage and among them there were only 7 with cavities. Of 312 afebrile cases, 303 showed no rise in temperature, whereas 9 developed an elevation of temperature after the treatment. In 177 cases the sputum did not remain free from bacilli for one month after the treatment; in 192 cases it remained bacilli-free. Of 101 cases observed for only 6 months or less, 76 cases retained positive sputum, whereas of 91 cases, observed for 6 months to 7 years, only 17 retained positive sputum. According to radiological examination of the 369 cases, 97 remained exudative and 80 productive. After 6 months' observation the exudative cases tend to remain sputum-negative better than the productive cases.—*La débaciliarition dans la tuberculose pulmonaire traitée par la sanochrysine, C. H. Würtzen, Acta Tuberc. Scandinav., Fasc. 1–2, 1934, viii, 78.*—(*F. B. S.*)

Sanocrysin and Artificial Pneumothorax.—In the majority of cases of pulmonary tuberculosis, the disease is not confined to one lung. Therapeutic pneumothorax, instituted on the more advanced side, has proved an efficacious form of treatment. In certain cases, however, the favorable response of the collapsed lung is nullified by progressive disease on the contralateral side. In such cases, sanocrysin will cause a decisive improvement in the patient's con-

dition. The results in 19 patients, to whom this drug was administered, were encouraging. A general tonic effect was observed in nearly all the cases, the sputum lessened in amount and improved in character, and serial skiagrams showed striking improvement. It is thought that sanocrysin stimulates the defensive mechanism of the body, producing increased resistance and increased formation of connective tissue. Because favorable cases of tuberculosis are associated with an increase of lymphocytes and unfavorable cases with an increase of monocytes, it is postulated that sanocrysin may stimulate the reticuloendothelial system with a resultant lymphocytosis.—*The Value of Sanocrysin in Therapeutic Pneumothorax, J. Cribbin, Tubercle, January, 1934, xv, 145.*—(*T. O. R.*)

Results of Artificial Pneumothorax.—Eighty sputum-positive cases, in which artificial pneumothorax was induced between 1924 to 1930 and in which for various reasons refills have been discontinued, were compared with 33 similar cases in which induction was attempted and proved unsuccessful. Forty of the successful cases developed fluid. All cases have been followed up to November, 1933, which permits of a three- to nine-year observation of these patients. Of the 80 inductions, 64 (80 per cent) are alive, 51 (63.75 per cent of the total) now have negative sputum, 51 (63.75 per cent) are fit for work, and 16 (20 per cent) are dead. Of the 33 control cases, 11 (33.3 per cent) are alive, 5 (15.2 per cent of the total) now have negative sputum, 6 (18.2 per cent) are fit for work, and 22 (66.6 per cent) are dead. The end-results of the successfully induced cases which developed fluid were parallel to those which did not develop fluid.—*Artificial Pneumothorax: an After-History of 113 Cases, R. R. Trail, Brit. M. J., March 3, 1934, no. 3817, 373.*—(*T. O. R.*)

End-Results of Artificial Pneumothorax.—The two- to fifteen-year end-results in 324 pneumothorax cases are reported. Most of the patients had far-advanced pulmonary tuberculosis. In minimal and moderately advanced cases pneumothorax was most often utilized in the treatment of uncontrollable haemorrhage. The patients were observed for a period of 2 or 3 months at complete bed-rest before pneumothorax was instituted. In the years 1916–1930, inclusive, 377 patients with pulmonary tuberculosis were treated with pneumothorax, and in 86 per cent information as to the present status is available. Of these 324 patients, 37 are excluded because 13 are still receiving pneumothorax, two since 1924; 18 were discontinued in 1931 and 1932, too recently to be included; 3 were bilateral pneumothorax; and 3 were found to be nontuberculous. There were 102 cases in which pneumothorax could not be maintained 3 months; of these, 94 are now dead. This leaves 185 patients who received pneumothorax for at least three months and the pneumothorax has now been discontinued more than two years. The excellent opportunity to observe these patients closely was due to the follow-up clinic and a rehabilitation organization maintained in connection with the hospital. Of the 185 patients, 143, or 77 per cent, had predominantly unilateral pulmonary tuberculosis, while 42, or 23 per cent, had predominantly bilateral disease. In the former groups, 28.6 per cent were clinically arrested; 13.3 per cent improved; 9.7 per cent stationary; 2.8 per cent progressive; 2.8 per cent unknown; and 42.6 per cent dead. In the bilateral group 4.7 per cent were clinically arrested; 9.5 per cent improved; 11.9 per cent progressive; and 74 per cent dead. Among the 143 patients with unilateral disease the incidence of pleural effusion in the clinically arrested group and the fatal group was approximately the same, 80 to 78 per cent. The effusion should not be aspirated unless pressure symptoms or other urgent indications arise. About 16 per cent of all effusions were empyematous, giving these patients a gloomy prognosis.—*Pneumothorax Treatment of Pulmonary Tuberculosis, E. H. Rubin, Am. J. M. Sc., March, 1934, clxxxvii, 331.*—(*E. M. J.*)

Artificial Pneumothorax.—Of 584 cases of pulmonary tuberculosis, mostly in the third stage of the disease, treated by artificial pneumothorax it was possible to trace only 258, and in some of these it was impossible to determine if the patient was able to work or not. This report covers the period from 1924 to 1931; the patients were almost entirely of the destitute and ignorant class. One hundred and four patients had pneumothorax treatment for over six months; at the end of one year 103 were living; at the end of six years 72 per cent were alive and 64 per cent were able to work. In the group of patients who had three to six months of treatment, only 42 of the 51 were alive at the end of a year, and 61 per cent at the end of six years, with 57 per cent fit for work. Of 60 patients who had less than three months' treatment 48 were alive at the end of a year, and 33 at the end of the six-year period. Those cases in which artificial pneumothorax had been unsuccessfully attempted were used as control cases; of these there were 43, of whom 34 were alive at the end of a year, 26 at the end of six years, with 58 per cent able to work. A comparison of these

results, obtained from the Madras Government Tuberculosis Hospital, with those reported by Frimodt-Moller at Arogyavaram Sanatorium shows throughout a distinctly higher percentage of patients alive and able to work in the Madras group, but these differences are probably explicable by the inadequacy of the after-histories in so many instances. It is concluded that although the ultimate results of artificial-pneumothorax treatment are much inferior to the immediate results, they are definitely superior to those obtained by ordinary methods.—*The Ultimate Results of Artificial Pneumothorax Therapy, M. Kesava Pai & P. K. Gunasagaram, Patna (India) Jour. Med., October, 1932, vii, 255.*—(*B. B.*)

Effect of Fluid in Artificial Pneumothorax.—Of 80 cases, positive for tubercle bacilli, in which artificial pneumothorax was induced at Midhurst between 1924 and 1930, and all since having discontinued refills, fluid appeared at some time during the treatment in 40. Of these 40 patients, 31 are alive after three to nine years from the date of the appearance of the fluid, and 25 of these have negative sputum. Nine patients are dead, 3 of these from an acute spread following an obliterative pleuritis, 1 from an acute spread in the contralateral lung soon after the appearance of the fluid, 1 from an exacerbation in the homolateral lung, and 4 from tuberculous pyopneumothorax. Tuberculous pyopneumothorax is a serious complication, but when this does not develop, fluid has seldom a bad effect on the ultimate result.—*The Effect of Fluid Complicating Artificial Pneumothorax, R. R. Trail, Brit. M. J., February 3, 1934, no. 3813, 183.*—(*T. O. R.*)

Artificial Pneumothorax at Higher Altitudes.—The effect of higher altitudes on pneumothorax cavities is very comparable to that on other gas-containing bodies under the same conditions. The volume of a pneumothorax, the modifications of pressure in the pleural cavity and of pleural tension in different altitudes may be calculated by a formula. The results obtained by calculus were checked actually on patients with pneumothorax, who were taken to higher altitudes in pneumatic caissons. The intrapleural pressures were measured before rising, then at altitudes of 1,000 and 2,000 metres, and again after descent. It is concluded that the gaseous pocket of an artificial pneumothorax tends to dilate at higher altitudes; therefore, a patient receiving artificial pneumothorax who is contemplating going to higher altitudes, should not receive a pneumothorax refill; it might even be advisable to withdraw some air just before leaving for higher altitudes.—*Pneumothorax et changements d'altitude, étude physiopathologique, C. Trocme, Ann. Méd., February, 1934, xxxv, p. 138.*—(*J. P. N.*)

Homolateral Phrenicectomy and Artificial Pneumothorax.—In patients receiving collapse therapy by artificial pneumothorax, adhesions often prevent complete pulmonary collapse. In these cases, phrenicectomy permits more complete relaxation of the lung and consequently enhances the effect of the pneumothorax. Phrenicectomy in patients with complete collapse offers no advantages and is therefore contraindicated. After hemidiaphragmatic paralysis the quantity of air required at each refill is considerably diminished, so that intervals between refills may be lengthened. Eight cases in point are reported.—*L'associazione omolaterale della frenicoexeresi al pneumotorace terapeutico nella TBC polmonare., A. Iraci, La lotta contro la tubercolosi, January, 1933, iv, 16.*—(*U. E. Z.*)

Diaphragm after Phrenic Surgery.—The best constants for measuring the position of the diaphragm were found to be: (1) a horizontal line drawn through the domes before and after operation and the paralyzed side compared with the normal; (2) the distance from the transverse process of the first thoracic vertebra to the dome of the hemidiaphragm. The hemidiaphragm was called immobile if there was no motion on ordinary breathing. The sniffing and Bittorf tests might bring out paradoxical motion in this group. Of the 138 phrenicoexairesis cases, no rise of the diaphragm occurred in 8.7 per cent, while 90 per cent showed an average of 4.5-cm. elevation, not including one case in which the elevation reached 11.3 cm. Extremely high rises are not frequent; two right hemidiaphragms rose 9 cm., and one left 11.5 cm. Contrary to the generally reported findings, the average rise on the right was 4.3 cm. and on the left, 4.7 cm.; 28 per cent right-sided cases had rises of 5 to 9 cm., while 43 per cent of the left-sided cases had a similar rise. The chance of obtaining some rise was 8 per cent better on the right. Functional changes were studied in 112 cases. In 46.4 per cent the hemidiaphragm became immobile soon after operation, and remained so for periods of observation varying between 3 months and over 5 years. Paradoxical motion developed in 12.5 per cent of these cases on the average of 3.5 months later. Of the 3 cases which showed complete immobility before operation, one showed no elevation while the other two became elevated 4 cm. From the start 36.6 per cent of the 112 cases showed paradoxical motion. In

half of these the motion persisted throughout the observation period, while in 26.8 per cent the hemidiaphragm became immobile after 1 to 10 months. The postoperative position of the paralyzed hemidiaphragm is not determined to any important degree, if at all, by the length of nerve evulsed. The cases in which more than 10 cm. was removed had a slightly higher average rise than the ones having less than 10 cm. removed. The degree of elevation bears no consistently direct relation to the time elapsed after operation. The amount and time of the maximum rise depend on the combined action of the intrathoracic and intraäbdominal pressures, atrophy of the diaphragm, and the pathologicoanatomical character of the pleuropulmonary lesion, especially when the lesion is mainly in the lower lobe. Immobility followed by paradoxical motion, or *vice versa*, is due to the variation in the factors given above.—*The Behavior of the Diaphragm after Phrenicoexairesis, H. Schwatt, Am. J. M. Sc., March, 1934, clxxxvii, 338.*—(*E. M. J.*)

Unsuccessful Phrenicoexairesis.—Immediate failure to produce paralysis of the hemidiaphragm by interruption of the phrenic nerve may be due to either removal of the wrong nerve or removal of an insufficient length of the phrenic nerve. Since in most cases the accessory fibres of the phrenic nerve meet the main trunk near or above the hilum of the lung it is necessary to remove at least 10 cm. of the nerve in order to interrupt all the motor pathways. Restoration of normal function after temporary paralysis is explained by the presence of accessory or double phrenic nerves. Because of the small proportion of failures, protracted search for accessory nerves is not advised nor is reoperation after successful phrenicoexairesis frequently indicated even though the hemidiaphragm may assume its normal motion.—*Unsuccessful Phrenicoexairesis, H. Schwatt, J. Thoracic Surg., June, 1934, iii, 503.*—(*J. F. B.*)

Pneumonolysis.—In more than one-half of the patients in whom pneumothorax is indicated pleuritic adhesions render the treatment unsuccessful, and the continuation of such ineffective treatment for many months, and even years, is to be deplored. Stretching adhesions by increasing intrapleural pressure is seldom successful, except when minor adhesions are present, and it is often dangerous. The use of the electrosurgical method has eliminated the numerous disadvantages of the galvanocautery, namely, heat, smoke, pain, reaction after operation, and serious haemorrhage. It is important to distinguish various types of adhesions, since some are technically of great significance and others are relatively unimportant; in addition, some, like band adhesions, and cone-shaped adhesions, are severed at the chest-wall attachment and others like fan-shaped adhesions are severed near the lung attachment. It is unfortunate that diffuse adhesions, which are responsible for more failures in pneumothorax than any other kind of adhesions, are often not amenable to cutting. By use of the high-frequency current the actual cutting of adhesions is preceded by the coagulation of blood-vessels. The Unverricht thoracoscope, with modifications by the author, is used, and, except for anterior apical adhesions, is introduced posteriorly since most adhesions are posterior, and the intercostal vessels are better protected by the rib sulcus posteriorly. The electrode, in most instances, is best inserted in the anterior axillary line. A careful study of the adhesion to be severed is essential; if cut too close to the chest-wall, unnecessary pain ensues, if too close to the lung, an opening into the lung may be made which is almost certain to result in empyema. Of the 249 cases treated during the past seven years, 61 per cent were technically and clinically successful. In 19 cases the attempt was technically unsuccessful but clinically successful. In 76 cases the procedure was a failure because of the presence of fold adhesions. There were 2 deaths in this series, one from a spontaneous collapse of the other lung during an asthmatic attack seven days after operation, the other from a profuse haemorrhage after the lung was successfully collapsed. In the latter case, the patient had been bleeding profusely from an open cavity before operation. The article is well illustrated, especially with regard to the various types of adhesions.—*Severing Adhesions in Artificiol Pneumothorax by the Electrosurgical Method, R. C. Matson, Surg., Gynec. & Obst., March, 1934, lviii, 619.*—(*B. B.*)

Pneumonolysis with Pectoral Muscle Fillings.—Supraperiosteal and subcostal pneumonolysis with a filling of the pectoral muscles is defined as the freeing of the upper ribs from their periosteum and the tucking of the pedicled pectoral muscles between the ribs externally and the periosteum, intercostal muscles, pleura and lung internally. There are a number of restrictions placed upon its use and relatively few patients present the proper indications. It has been employed but seven times in a series of over 1,100 other operations for pulmonary suppuration. The technique as given is simpler than other types of pneumonolysis procedures, there is no risk of tearing lung or pleura, the extent of collapse of the lung is controllable, the expec-

toration mechanism is not interfered with, and the periosteum of the bared ribs is pushed deep into the thorax where it may be expected to form new ribs.—*Supraperiosteal and Subcostal Pneumonolysis with Filling of Pectoral Muscles, J. Alexander, Arch. Surg., March, 1934, xxviii, 538.*—*(J. F. B.)*

Intrapleural Pneumonolysis.—Partial collapse of a tuberculous lung which does not close cavities or result in sputum negative for tubercle bacilli offers the patient little aid for the arrest of his disease. As an adjunct to pneumothorax therapy, the division of adhesions which prevent collapse is of definitely established value. A critical review is made of the cases reported from the years 1924 to 1932. Of the 1,850 reported cases, 75.5 per cent were clinically successful and 24.5 per cent unsuccessful. Of patients made worse there were 4.5 per cent and of patients who died from the operation 1.08 per cent. The reports of complications cover 2,043 patients. Sixteen cases of small haemorrhage and 15 of severe haemorrhage were reported. Small serous exudates are reported in 460, or 22.5 per cent of cases. Effusions which progressed into tuberculous empyemata were found in 46, or 2.2 per cent. Mixed-infection empyema, the most serious of complications, appeared in 37, or 1.7 per cent of all cases. Other much less frequent complications are mentioned. Of patients upon whom the open methods of pneumonolysis was performed there are only 52 reported. Comparison of the results and complications leads to the belief that the closed method is the one of greater safety and effectiveness.—*Intrapleural Pneumolysis, J. A. Moore, J. Thoracic Surg., February, 1934, iii, 276.*—*(J. F. B.)*

Supraclavicular Apicolysis.—For the collapse of apical cavities a procedure is proposed as an additional conservative method to be used for patients in whom major surgical procedures are contraindicated. A supraclavicular incision is made over the lateral border of the sternomastoid muscle. The anterior scalenus muscle is exposed, and the phrenic nerve is isolated and avulsed. The anterior scalenus muscle is then severed as high as possible and the distal portion is bent backward to protect the subclavian vessels. The posterior muscle sheath is next incised, and the index finger is passed downward and backward, stripping free the parietal pleura. The apex of the lung may be gently dissected free as low as the second rib anteriorly and fourth rib posteriorly. The space left by this portion of the collapsed lung may then be filled with any of several materials used for a pack. The muscle sheath is now resutured and the skin incision is closed tight.—*Extra-Intrapleural Supraclavicular Apicolysis, M. Joannides & P. Shapiro, J. Thoracic Surg., February, 1934, iii, 315.*—*(J. F. B.)*

Treatment of Tuberculosis by Bronchial Occlusion.—Bronchial occlusion was accomplished by painting the bronchial mucosa with a 35 per cent solution of silver nitrate. Complete occlusion and massive atelectasis resulted in about two weeks. Saline suspensions of human tubercle bacilli (H119) containing 0.1 mgm. per kg. body weight of dogs were used. In the first group of 17 dogs the injections were made in the femoral vein. Atelectasis of two pulmonary lobes was obtained from 2 to 6 weeks later. Nine dogs died of miliary tuberculosis and the others were killed at varying periods up to 8 months. The inflated lobes were studded with tubercles while the atelectatic ones showed no or very few gross tubercles. The intensity of the disease increased with its duration in the inflated lungs, but the reverse was true in the atelectatic lungs. In a second group of 8 dogs tubercle bacilli were introduced into the left lung through the left pulmonary artery and later massive atelectasis was produced. In 4 dogs microscopical tubercles were difficult to find in the collapsed lobes. In two, in which infection and collapse were present longest, definite tubercle-formation was absent. One dog died before collapse and the three others developed miliary tuberculosis of the right lung. To evaluate the effect of atelectasis upon cavities, subpleural injections of heavy suspensions in lipiodol were made in each of the three right lobes of 7 dogs and one or two lobes collapsed only after there was X-ray evidence of cavity-formation. In the inflated lobes there were cavities in each case. In the collapsed lobes only one contained one small cavity, while in two no tuberculous lesion could be demonstrated. In the last group both lower lobes were infected by intrabronchial injections of heavy suspensions in lipiodol. One lower lobe was collapsed and the other used as a control. The results were similar to those above. In general, the tuberculous processes in the atelectatic lobes showed evidence of regression and healing. This is interpreted as being largely due to death of the tubercle bacilli for lack of growth material. There were prevention of bronchogenic spreads and efficient closure of cavities. Clinical application upon 4 human patients with hopeless bilateral involvement has not been satisfactory, and as yet few conclusions can be drawn. More difficulty in applying the cautery and less reaction to it have been en-

countered in man than in dogs. No complete collapse was obtained in man.—*The Treatment of Pulmonary Tuberculosis by Bronchial Occlusion, W. E. Adams & A. J. Vorwald, J. Thoracic Surg., August, 1934, iii, 633.*—(*J. F. B.*)

Pulmonary Collapse with Extreme Atrophy and Cirrhosis.—Commonly used methods for collapse therapy in lungs with cavitation may not be successful because sufficient compression cannot be employed. A new principle of greater selectivity and uniformity of compression, independent of mediastinal stability, is brought up in these experiments. Twenty dogs with normal lungs were employed. In each the lower right lobe was enclosed in a loosely fitting envelope of rubber. One or two dogs were killed at the end of 4, 7 and 12 days; 2, 3 and 5 weeks; and 5 and 7 months, so that a more or less complete picture of the whole process was obtained. The immediate effects were severe, large amounts of fluid collected in the majority, and dyspnoea was marked in several. Removal of the fluid by aspiration relieved them. After 12 days the surviving dogs gained steadily and behaved normally. After the fourth day postmortem findings showed considerable amounts of fluid and masses of shaggy fibrin. The enclosed lobe was always atelectatic, small, flabby and wrinkled. After the fourteenth day this lobe became steadily smaller and more rounded. A distinct fibrous quality appeared in the exudate next to the pleura. By the fifth week a dense fibrous capsule covered all parts of the lobe. At the end of 5 months the lobe was very small and firm, and the cut-surface was uniformly gray and structureless. Microscopic examinations showed a progressive atelectasis, invasion by capillaries, phagocytic cells and fibroblasts, and further condensation, until after seven months there was almost complete fibrous replacement so that the lobe consisted merely of collagenous and hyaline fibres with a few bronchi held collapsed by scar-tissue. Before this method can be applied to man further technical elaborations and study of the parenchymatous changes produced in the lung must be made.—*A New Principle of Pulmonary Collapse with Production of Extreme Atrophy and Cirrhosis of the Lung, J. J. Wolfe, T. T. Wang & C. M. Van Allen, J. Thoracic Surg., February, 1934, iii, 300.*—(*J. F. B.*)

Operative Exploration and Obliteration of Cavities.—The essential objective of the operative treatment of pulmonary tuberculosis should be the collapse of cavities. The procedure here described is one of operative exposure and investigation of the site of cavitation together with the application of measures to aid the collapse of cavities. The exact location and extent of the cavitation is studied, primarily by bronchography. After mobilization of the scapula the approach to the lesion is made by subperiosteal costectomy of 4 to 6 ribs. The soft tissues are dissected free and reflected mesially. Soft-walled cavities may then be palpated and collapsed by direct pressure or pressure toward the mediastinum applied against the lateral rib-stumps. When there is pronounced thickening of the pleura, adequate collapse of the cavity is not obtained by this procedure. The scar-like tissue is then excised, layer by layer, until soft tissue is encountered. Collapse may then be obtained with pressure, as above. This dissection is made upon the posterior rather than the vertebral aspect of the lesion. These steps constitute cavernolysis. The operation is terminated by laying the musculoperiosteal flaps in the paravertebral gutter, packing with iodoform gauze, and layer closure of the wound. The gauze is left for six weeks and not replaced. Fluid fills this dead space and is later absorbed. The operation usually is done in one stage for smaller cavities but several stages may be necessary for larger lesions. The results of such operative treatment in 34 patients, although not end-results in all, seem satisfactory to the writer.—*The Exploration of the Lesion and Pneumocavernolysis in the Operative Treatment of Pulmonary Tuberculosis, H. Neuhof, J. Thoracic Surg., February, 1934, iii, 270.*—(*J. F. B.*)

Complete Pneumonectomy.—Complete removal of a lung has been done successfully many times in animals, but in human beings it has been performed with success only once before, by Nissen in 1931. (In an appended note is listed a brief résumé of the 12 cases which have come to the author's attention since the present report was made; of these, seven were successful.) In the author's case, a 13-year-old girl developed a widespread pneumonitis of the left lung following aspiration of a piece of rubber dam during tooth-extraction. At bronchoscopy, when the foreign-body was removed, considerable pus was liberated, and bronchoscopic aspirations were instituted. A tension pneumothorax, resulting from a spontaneous rupture of the lung, was followed by empyema. By this time X-ray pictures, taken by the Potter-Bucky technique, made the presence of multiple lung abscesses apparent, and a thoracoplasty was performed. Since this procedure did not relieve the cough and expectoration, a complete pneumonectomy was

decided upon. This was performed in two stages, at the first stage only the lower lobe being freed; at the second stage, six days later, the pedicles of the two lobes were separately ligated with braided silk and also with elastic rubber tubing, and the wound was closed tightly to await necrosis and sloughing off of the lung, which occurred by the seventeenth day. Recovery was interrupted by the occurrence of an abscess in the right lung which subsided without operative interference. Six and a half months after the pneumonectomy, the girl was apparently cured. From a review of the attempts of pneumonectomy in human beings it appears that haemorrhage, infection of the stump, septicaemia, and oedema of the contralateral lung are the important complications. In some instances a one-stage operation has been done, with success; in the author's case and in that of Nissen two-stage operations were performed.—*Total Removal of Left Lung for Bronchiectasis, C. Haight, Surg., Gyne., & Obst., April, 1934, lviii, 768.*—(*B. B.*)

Material for Extrapleural Plombage.—Animal experiments were performed to improve, if possible, the filling material for extrapleural plombage. Four different types of material were tried: (1) wax, gelatine and lanoline, (2) stearin, gelatine and lanoline, (3) starch and gelatine, (4) cellulose and gelatine. At the same time experiments were performed with the customary paraffin filling. The best material seems to be the wax and gelatine mixture, because it healed in the tissues without disturbing reactions. In addition to a dense capsule, progressive organization of the filling material develops. The plombage does not decrease in size, because there is not enough resorption of the material. The histological processes of encapsulation and organization are described in some detail for the different materials used.—*Versuche mit einer neuen Masse zur extrapleuralen Plombierung, P. G. Schmidt, Beitr. Klin. Tuberk., March, 1934, lxxxiv, 363.*—(*M. P.*)

Compression of Thorax.—Following thoracoplasty a rather sharply angulated scoliosis of the spine occurs, with the convexity of the curve projecting into the operated side. If, following operation, postural wedge compression of the thorax is used, for example, with a rolled pillow, this spinal curvature is avoided. As a result, a more efficient collapse of the lung can be obtained, provided this compression is utilized within a day or two after operation and continued until the ribs regenerate, stiff scar-tissue forms, and the divided and separated muscles become reattached and resume function. By maintaining the spine in a normal or nearly normal position a better visualization of the collapsed lung by X-ray is obtained. Illustrations are shown of a case in which the scoliotic portion of the spine concealed an incompletely closed cavity, which was clearly revealed when the vertebral bodies were brought into normal alignment by wedge compression. The use of this type of compression is advocated also in cases of scoliosis due to the pulling of pleural adhesions; in this instance the convexity of the curvature points in the direction of the unaffected side, the reverse of that of thoracoplasty scoliosis.—*Postural Wedge Compression of the Thorax, J. D. Bisgard, J. Thorac. Surg., October, 1933, iii, 99.*—(*B. B.*)

Surgical Status of Collapse-Therapy Patient.—The increasing employment of collapse therapy for patients with pulmonary disease adds yearly greater numbers of people with impaired breathing mechanisms. The various groups reported have had surgical procedures performed at the time pulmonary collapse was being employed. In the group of 22 patients receiving unilateral pneumothorax there were 24 major extrathoracic surgical procedures. These included appendicectomy, salpingectomy, uterine suspension and 3 types of orthopaedic operations. One patient was a complete diabetic. One patient died of tuberculous enteritis, salpingitis and peritonitis after removal of a tuberculous appendix. One patient had a spread of his disease to the contralateral lung, one had temporary increase in his symptoms only, and two developed pleural effusions within three months. General sanatorium experience with tuberculosis and pregnancy leads to the opinion that the pregnancy not be interrupted. Some 12 such patients are reviewed. Some 93 minor surgical operations were performed in the group with unilateral pneumothorax. There were no unusual complications. Five patients with bilateral pneumothorax were subjected to varied operations, one an appendicectomy and another caesarean section, with satisfactory results. In another group of 8 patients who had had phrenic-nerve surgery 9 major operations were performed. Two other patients were delivered of full-term babies, with no complications. Fifteen patients with extrapleural thoracoplasty were subjected to some 20 other major operative procedures. One died from a ruptured appendix after a previous pneumonia. Three have gone through pregnancies with no complications, 5 have had accidents of considerable severity, and 27 have undergone various minor surgical operations. Spinal anaesthesia is of greatest help to this whole group of

patients and should be employed if local infiltration does not lend itself readily. Nitrous oxide may be used or ethylene, if deeper anaesthesia is necessary. Straight ether is undesirable. It is concluded that emergency surgical procedures may be undertaken without delay in patients having partial pulmonary collapse. Both major and minor operations have been well tolerated.—*The Future Surgical Status of the Collapse Therapy Patient, T. J. Kinsella, J. Thoracic Surg., February, 1934, iii, 221.*—(*J. F. B.*)

Pneumoperitoneum.—In the treatment of tuberculous peritonitis simple laparotomy has for a long time been known to be beneficial, and although the *modus operandi* has been much debated the excellent results obtained by introduction of various gases by the transabdominal route lends support to the view that it is the presence of gas itself in the peritoneal cavity which promotes healing. Diagnostic pneumoperitoneum is a simple procedure which often allows the diagnosis of female genital tuberculosis to be made; when combined with uterosalpingography, the diagnosis can often be made with relative certainty, especially since in tuberculosis of the Fallopian tubes the patency of the tubes persists. In inducing pneumoperitoneum the apparatus ordinarily used for the Rubin patency test is suitable, an oxygen tank replacing that of carbon dioxide. A long thin needle with a stylet is used. Hospitalization for 48 hours, with bed-rest, is sufficient. A litre of oxygen is the maximum amount that should be introduced at one time, although larger amounts have been introduced by other workers. Moribund patients should not be subjected to this procedure, nor should those with advanced pulmonary or with advanced ulcerative intestinal tuberculosis. A résumé is given of many of the cases reported in the literature; in some of these the response to oxygen pneumoperitoneum was striking, apparently complete cure occurred in as short a time as a month, perhaps after only one injection. Six additional cases are reported by the author. In one of these a large pelvic mass was visualized by the pneumoperitoneum method. Four days after the first treatment decrease in size was noted, and by the end of 10 months the mass was no longer visible although evidences of adhesions were present. Five years later the only abnormality to be found was a fixed retroversion of the uterus. In another case cessation of nightsweats and gain of 4 pounds in weight occurred in less than two months. A second treatment was given and in about 5 months cure was established.—*Oxygenpneumoperitoneum in the Diagnosis and Treatment in the Genitalia, Intestine and Peritoneum, I. F. Stein, Surg., Gynec., & Obst., March, 1934, lviii, 567.*—(*B. B.*)

Teeth in Tuberculosis.—Dental caries and pyorrhea are not true diseases, but symptoms of an upset in the acid-base equilibrium of the blood: the former, the result of a change toward acidosis and the latter of a change toward alkalosis. A balanced metabolism depends upon an efficient working of the endocrine autonomic system. Thus is found a sympathetic dominant group of people that tends toward acidosis and a parasympathetic dominant group that tends toward alkalosis. An individual in the sympathetic dominant group reacts to tuberculosis with symptoms out of proportion to the amount of involvement and recovers completely or dies of exhaustion. In the parasympathetic group the reaction to tuberculosis may produce few symptoms of disease but the condition tends to become chronic, persisting and slowly progressive. In an attempt to support or disprove this opinion, the teeth of 100 cases of pulmonary tuberculosis were studied together with the salivary reaction, the ratio of free to fixed acid in the urine, blood-pressure and bicarbonate reserve of the blood. The evidence that dental caries and pyorrhea are the result of a disturbance of the acid-base equilibrium, which is dependent upon autonomic balance, is supported by this investigation. The condition of the teeth gives a useful hint as to prognosis of the individual case.—*Dental Changes in Tuberculosis, F. W. Broderick, Journ. State Med., May, 1934, xlii, 260.*—(*L. F. B.*)

Relation of Sinusitis to Pulmonary Infections.—In an effort to determine whether any relationship existed between nontuberculous infection in one part of the respiratory tract of infants and young children with that of another part, a study of the roentgen findings was made of 58 cases followed at the Child Research Council of Denver, Colorado, children seen in private practice and at the Children's Hospital of Denver, and 100 children followed periodically since birth at the Child Research Council of Denver. It was felt that there was a definite relationship between sinus disease and nontuberculous chest disease, that the onset in both regions is approximately coincidental and that progress in one parallels that in the other, that increased severity of the condition in one region is associated with increased severity of the condition in the other, that cessation of sinus disease is usually accompanied by cessation of progress of nontuberculous chest disease, and that

both sinus and chest disease appear to have an insidious onset, be of long duration, and show chronological progressive changes.—*The Relationship of Sinus Disease to Chest Disease in Children, W. W. Wasson & H. D. Waltz, Radiology, April, 1934, xxii, 432.—(T. O. R.)*

Disease of Hilar Lymph Nodes.—The frequency with which actual clinical disease occurs in hilar lymph nodes increases with age. The pathological process may be an induration on the basis of anthracosis or silicosis; it may be tuberculosis or nonspecific infections. All these processes are likely to lead to periadenitis, which, in its turn, may involve neighboring organs, and these processes may lead to liquefaction and rupture into neighboring organs. A total of 138 cases of hilar lymph-node disease were observed. In 51 of these cases there was rupture into the bronchial tree: 8 of the 51 were healed, while in 43 an open communication existed between the diseased lymph node and the bronchial tree at the time of necropsy. Fourteen of these cases showed no pulmonary complications, 1 had pulmonary gangrene, 4 pulmonary abscess, 14 caseous aspiration tuberculosis and 10 had conglomerate tubercles in the respective pulmonary region. In addition to open rupture, there were anthracotic-silicotic indurations and thickenings of the submucosa with secondary changes in the mucous glands and in the epithelium of bronchi. Pigment was found to have migrated through the entire bronchial wall. There were distortions of cartilage, and destruction and resorption of cartilages by indurated tissue. Blood-vessels were frequently involved; most important of these were 15 cases in which diseased lymph nodes had perforated into pulmonary vessels. Without actual perforation, pigment may migrate through the entire vessel-wall and produce pigment metastasis in distant organs. A total of 34 diverticula of the oesophagus was observed, all due to lymph-node disease. Nineteen of these diverticula were simple and not complicated, 9 had a fistulous connection with the diseased lymph node, and in 13 cases there was a double rupture from the lymph node into the oesophagus and into the bronchial tree. The nerves in the mediastinal space are frequently embedded in periadenitic scar-tissue and under these conditions they may be definitely impaired. Such impairment was demonstrated 47 times for the left and twice for the right, four times for both recurrent nerves, seven times for the vagus nerve, and twice for the right and four times for the left phrenic nerve. With the exception of the recurrent nerve, the involvement is much more frequent on the right side for all the bilateral structures mentioned.—*Indurative und Zerfallsvorgänge in den mediastinalen Lymphknoten im höheren Alter mit Schädigung der benachbarten Organe, A. Arnstein, Beitr. Klin. Tuberk., August, 1934, lxxxv, 197.—(M. P.)*

Whooping Cough and Tuberculosis.—This paper presents an extensive study of 1,995 cases of pertussis observed in the course of 3 years in Vienna. In view of the high incidence of tuberculosis in that city, it was natural that some of the children with pertussis had tuberculous infection or active tuberculosis. Analysis of the clinical and postmortem observations indicated, however, that pertussis practically never aggravated an active tuberculosis, and certainly did not activate cases of latent tuberculous infection.—*Pertussis und Tuberkulose, E. Gabriel, Jahrb. f. Kinderhk., June, 1934, cxlii, 281.—(M. D.)*

Lipoid Pneumonia.—The exogenous introduction of oily substances frequently produces certain pathological conditions in the lungs. The lesions consist essentially of diffuse infiltrations of the parenchyma, with large monocytic cells which engulf the oil in an attempt of the organism to dispose of it, together with other inflammatory cell exudates, such as plasma, and eosinophilic and giant cells. After the inflammatory process subsides and healing takes place, there results local formation of fibrous tissue which replaces those portions of the parenchyma which previously had been the seat of the pneumonic process. Occasionally an acute inflammatory pneumonia follows, which causes death. This lesion has been termed lipoid pneumonia. Six cases are reported, five in infants and one in a child of four. Autopsies were done on all. In the first case an unidentified oily substance had been sprayed into the child's throat for some time. In the remaining 4 infants there was no history of aspiration of oily substances into the lungs, although postmortem examination showed their presence. In all the cases, however, there was a history of vomiting, and it is possible that during vomiting small amounts of fat, perhaps from milk, were accidentally aspirated. The sixth case was a four-year-old child who had had encephalitis followed by bulbar paralysis and in whom a pneumonic process developed as the result of the long-continued administration of large amounts of codliver oil. The mother stated that she had forced large quantities of oil into the throat of the child in an attempt to improve his general health. It is probable that the child, already afflicted

with encephalitis and bulbar paralysis, had lost the protective mechanism of preventing foreign matter from being aspirated into the lungs. Oil acts as a foreign body and is disposed of in at least three different ways: (1) expectoration with the monocytes, (2) absorption by the lymphatics or (3) encapsulation in granulomas. These are peculiar nodular formations of concentric rings of epithelial, giant and fibroblastic cells, in many instances encysting fat droplets. Their general appearance resembles tubercles. However, the epithelial cells which form the most conspicuous part of the lesion simulates more the lining epithelium of the bronchioles. The amount of oil and the length of time of administration have a definite bearing on the pulmonary lesion. The chemical composition of the oil may also have some influence. Experiment has shown that within a few minutes after the introduction of oil into the lungs, an inflammatory reaction and an invasion by large monocytes occur. The elimination of the oily substance is, however, slow. Since the introduction of iodized poppy-seed oil as a diagnostic aid, cases of lipoid pneumonia due to this substance have been observed. One of the authors recently saw such a case following the intratracheal introduction of this substance in an old person who later died of bronchopneumonia. The frequent use of oils in pediatrics practice by way of the mouth and nasopharynx offers ample opportunity for the oil, especially in the very young debilitated child, to find its way into the lungs. Areas of lipoid pneumonia may occur without symptoms and signs. With a history of the administration of oily substances a careful examination of the expectorated material for oil bearing monocytes might be of value.—*Lipoid Pneumonia, J. Rabinovitch & M. Lederer, Arch. Path., February, 1934, xvii, 160.*—(*J. S. W.*)

Broncholithiasis.—Patients with bronchial calculi are often mistakenly diagnosed as tuberculous because of chronic haemoptysis. In many cases the stones cause no symptoms during life and are found postmortem. Broncholiths provoke distressing spasmodic cough which is at times suffocating. Asthmatic crises occur when the calcareous fragments are disturbed or moved. Haemorrhage is very common and may be due to rupture of a vessel by the sharp edges of the stone or as a result of congestive inflammatory reaction in the tissues surrounding it. Circumscribed chronic bronchitis coexists with broncholithiasis, and eventually chronic interstitial pneumonitis or bronchiectasis may occur distal to the point of obstruction. The presence of secondary infection in these areas gives rise to constitutional and febrile reactions. Retrosternal pain, cough and bleeding are usually due to migration of the stone and the attacks may be aptly called pulmonary colic. The clinical diagnosis of broncholithiasis is very difficult unless the calculus is expelled. Given a very ill patient, with cough, pain, haemoptysis, a sputum negative for tubercle bacilli, a negative tuberculin reaction and absence of bronchiectasis or abscess as shown by X-ray, it is well to suspect stone. The X-ray evidence is often inconclusive, because many shadows which might be broncholiths are diagnosed as calcified lymph nodes and when the calcareous masses are very small, they may be hidden by conglomerate shadows due to ribs, blood-vessels or lymph nodes. Therapy is symptomatic. Omodei-Zaorini recommend a course of treatment with emetine and neosalvarsan. Two cases are reported.—*Contributo clinico allo studio della Broncholitiasi, A. De Natale, La lotta contro la tuberculosi, July, 1933, iv, 7, 748.*—(*U. E. Z.*)

Pathogenesis of Bronchiectasis—At birth the lungs of an infant consist mainly of interstitial tissue traversed by bronchi. The first breath distends the buds of the foetal bronchial tree and large alveoli are formed. New alveoli form in the peripleural portions of the bronchial tree. Pulmonary diseases of childhood influence markedly the rate and character of pulmonary differentiation. Interference with normal bronchial branching in the prenatal period results in no terminal-bud formation. The natural result is the formation of bronchiectasis and cystic disease of the lung. At birth portions of lungs may remain atelectatic. In these areas bronchiectasis may appear. Functional factors play important rôles in the fate of bronchi handicapped in development or injured by disease in early life. The normal cleansing power of the lung may be lost. The equalization of pressure within the lung and distribution of air controlled normally by collateral respiration and bronchomotor activity may be interfered with. So called pseudolobar pneumonia is the result. This may be transient, or it may persist and progress to the condition known as polycystic disease of the lung. The mechanical factors, expiratory push and inspiratory pressure, probably are alternately operative in the production of distended bronchi. Clinical bronchiectasis depends upon the failure of adequate drainage and not mere bronchial dilatation. Emphysematous distention or collapse of other portions of the lung is a result of failure of drainage. Cough and bronchial obstruction are also important mechanical factors. Actual bronchiectatic dis-

ease is due to the destructive influences of infection. The infections of childhood which most often affect the bronchi of adults are those of the influenzal type and the bronchopneumonias associated with measles and pertussis. Probably the great bulk of bronchiectases is not the direct sequel of childhood bronchial disease, since in every bronchiectatic lung adjacent bronchi can always be demonstrated in the state of atrophic bronchial dilatation and bronchi with mucous membrane intact, yet with the first phase of an infectious process in the subepithelial layers, can also be found. The sequence of events is atrophic bronchiectasis followed by inflammatory changes in the subepithelial layer, cellular infiltration of the bronchial wall (hyperplastic bronchiectasis), and finally organization of this process into fibrous tissue creating cirrhotic bronchiectasis with its two forms of elastic and rigid-walled saccular bronchiectases. The influence of bronchial obstruction in bronchiectasis with pulmonary cirrhosis cannot be denied. Because of collateral respiration in the lung, obstruction only plays a part when whole lungs or lobes are involved in the bronchiectatic process, except in those cases presenting accessory lobes. Any of the pyogenic organisms may be responsible for the infectious destructive processes of this disease. Certain anaerobic organisms may cause similar destructive processes but their presence is not essential to the process. Bronchiectasis develops more frequently in patients with damaged bronchi and chronic infections in the upper air passages.—*The Pathogenesis of Bronchiectasis, J. A. Miller, J. Thoracic Surg., February, 1934, iii, 246.*—*(J. F. B.)*

Bronchiectasis and Situs Inversus.—Two cases are reported in which bronchiectasis was associated with complete visceral situs inversus. This combination is rare and is no argument in favor of congenital bronchiectasis.—*Bronchiektasien bei Situs viscerum inversus totalis, K. Nüssel & H. Helbach, Beitr. Klin. Tuberk., March, 1934, lxxxiv, 424.*—*(M. P.)*

Atelectasis and Bronchiectasis.—This paper is based upon the necrotic, roentgenological, and clinical observation of 50 cases of atelectatic bronchiectatic processes in the lower lobe of the lung. Twenty cases are reported in detail. In the roentgenogram the shadow common to this group may be described as a small dense right triangle, the lateral border, or hypothenuse, extending from the hilum to a variable point on the diaphragm. The shadow is usually seen on the right, but may be on the left or bilateral. The mesial portion is obscured by the cardiac shadow, because the heart, diaphragm and other adjacent structures are drawn toward the involved side. The shadow is due to collapse of a lower lobe, which in most cases followed a short attack of an acute pulmonary process simulating pneumonia and was considered secondary to bronchial obstruction by viscid secretions. Other cases were associated with anaesthesia, foreign body, subphrenic infection, pressure of adjacent structures, or congenital atelectasis. In the cases in which the shadow appeared during the first year of life, death occurred in all. The prognosis was best determined by observing the shadow at successive roentgen examinations. The fluctuation in the size of the shadow, indicating access of air to the involved lobe, was of favorable significance. In cases that did not show this, dilatation of the bronchi occurred sooner or later within the triangular area of density, ultimately giving the clinical and roentgenological picture of bronchiectasis as noted in older subjects. This development occurred in the course of a few months, frequently in a period of years. Early and frequent bronchial drainage must be instituted in order to minimize the danger of bronchiectasis. In very early cases, postural drainage is sufficient. In advanced cases, particularly when saccular dilatation of the bronchi has occurred, bronchoscopic aspiration appears to be the only method of completely removing the secretion and sediment in the bronchi.—*Atelectasis and Bronchiectasis in Children: A Study of Fifty Cases Presenting a Triangular Shadow at the Base of the Lung, W. E. Anspach, Am. J. Dis. Child., May, 1934, xlvii, 1011.*—*(M. D.)*

Enlargement of Atelectatic Lung.—When inflammation develops in a massively atelectatic lung or part of the lung, the inflammatory lesion cannot be recognized roentgenographically because its X-ray shadow blends indistinguishably with the homogeneous shadow of the surrounding airless lung. Only the symptoms remain to indicate the nature and the extent of the infection, and they are often very inadequate. In such cases the size of the involved portion, as noted on the roentgenogram, serves as a diagnostic point. A massive atelectatic lung increases in size when inflamed and returns to its normal size when free again from inflammation. The increase in size is roughly proportional to the activity and extent of the inflammation. This sign is reliable if the roentgenographic technique is constant, allowance is made for shrinkage of the atelectatic part from the contraction of scar tissue, the possibility of the existence of a neoplasm

in the atelectatic part is eliminated, and the atelectasis involves, at least, one or more whole lobes. Experimental and clinical evidence is presented to support this contention. An atelectatic noninflamed lung is very small in comparison with the fully inflated normal lung or with the deflated noninflamed lung.—*Enlargement of the Atelectatic Lung, Roentgenographic Sign of Inflammation, T. T. Wang & C. M. Van Allen, Radiology, April, 1934, xxii, 475.*—(*T. O. R.*)

Treatment of Bilateral Pneumothorax—In the treatment of bilateral open pulmonary tuberculosis in older children (12 to 16 years), the use of bilateral pneumothorax appears to be of great value. Of 12 children who have been treated in this way for 2 years or more, all are still living; while, of 44 cases treated conservatively for 2 years or longer without the use of pneumothorax, 33 have died. The results in the two groups are not strictly comparable, as a much greater percentage of the former group have been treated in the sanatorium rather than as ambulant patients; and the method has as yet not been utilized for a long enough time to permit too definite conclusions.—*Die Bedeutung der doppelseitigen Pneumothoraxbehandlung für die Prognose der offenen Lungentuberkulose des Kindes- und Jugendlichenalters, Margarete Ried, Monats. f. Kinderhk., September, 1933, lix, 24.*—(*M. D.*)

Hydatid Disease of Lung.—Human infection by hydatid cysts is usually due to eating unboiled vegetables soiled by the excreta of dogs or contaminated by flies. The swallowed ova develop into embryos which penetrate the wall of the bowel and are carried by the portal vein to the liver and other parts of the body. The liver is the commonest site with the lung next, in the proportion of 10 to 1. Haemoptysis occurs in 60 per cent of hydatid cysts of the lung. The diagnosis is clearly established, after spontaneous rupture, by finding hooklets, scolices, or portions of the cyst-wall in the sputum. Otherwise it may be fairly well confirmed by a correlation of the roentgen-ray appearance with the history, clinical and laboratory findings. The complement-fixation test of Axhausen the precipitin-reaction test, and the Casoni intracutaneous test have been found reliable in a great proportion of the cases. A case is reported of hydatid cyst of the lung in a girl aged 8 years with rupture through a bronchus followed by recovery. *Conclusions.*—Removal of cysts by operation has grave risks and in children a mortality of 15 per cent. Spontaneous rupture is not free from danger, as death may result either from suffocation or from an acute intoxication of an anaphylactic nature. Generally speaking, the wisest course is to refrain from interference and be a watchful observer of nature's methods.—*Hydatid Disease of the Lung with a Case Report, R. G. P. Evans, Lancet, June 16, 1934, ccxxvi, 1281.*—(*B. T. McM.*)

Blastomycosis of Lungs and Pleura.—Blastomycosis of the lungs and pleura is often confused with pulmonary tuberculosis, and the condition is probably more common than is ordinarily recognized. Asthenia, low-grade fever, haemoptysis, and abnormal physical findings in the chest are present in both instances. The sedimentation rate of erythrocytes may be increased in either disease, and it may be impossible to differentiate one clinical entity from the other by roentgenograms. A leucopoenia with a relative lymphocytosis may be present in blastomycosis of the lungs. The diagnosis can be established with certainty only by the demonstration of the organisms in the sputum or pleural fluid, rarely in the bloodstream. Animal inoculation is unsatisfactory due to the nonpathogenicity of most strains of blastomyces for laboratory animals, and the range of pathogenicity of different strains for different animals. Insufficient data are available on serological and immunological reactions. The portal of entry of the blastomyces in primary infection of the lungs is through injury to the mucus membranes of the nasopharynx, or if secondary, by metastasis by way of the blood-stream or by the lymphatic channels. Blastomycosis may complicate an antecedent tuberculous process in the lungs, or may itself be associated with a streptococcal pulmonary infection. Specific therapy is not established. Potassium iodide, neosalvarsan, quinine, and autogenous vaccines are among effective measures tried. A case is reported of primary blastomycosis of the lungs and pleura with apparent recovery.—*Über einen Fall von Blastomykose der Lungen und der Pleura, A. Spreng, Schweiz. med. Wchnschr., Sept. 22, 1934, xxxviii, 879.*—(*V. T.*)

Significance of Monilia in Sputum.—In order to determine the significance of monilia as an aetiological factor of chronic pulmonary disease, 50 patients were bronchoscoped. Specimens of bronchial secretion were obtained and examined. Monilia were absent in the first 25 cases examined. In the remaining 25 cases, the sputum was also examined. In this second series, monilia were demonstrated in the sputum of 11 cases and in the bronchial secretions in one case. This latter patient was suffering from pulmonary tuberculosis, and there was nothing to suggest that he was in any way adversely

affected by the presence of monilia in the bronchi. Therefore, bronchomoniliasis cannot be diagnosed from the examination of the sputum alone.—*The Significance of Monilia in the Sputum, B. H. Jones, Brit. M. J., March 3, 1934, no. 3817, 368.—(T. O. R.)*

Oidiomycosis of Lungs.—Because of the confusion concerning infections with *Coccidioides immitis*, which are usually fatal, and *Blastomyces dermatitidis*, which frequently are fatal, with the rarely fatal *Geotrichum* infections, a detailed case-report of an infection of the latter type is reported. Four other cases are cited and the cultural characteristics of the Geotrichum fungi are reviewed. Potassium-iodide therapy is indicated.—*Oidiomycosis of the Lungs, D. T. Smith, J. Thoracic Surg., February, 1934, iii, 241.—(J. F. B.)*

Syphilis of Lung.—A number of cases are presented in some detail in which pulmonary syphilis was diagnosed. It is emphasized that the diagnosis can frequently not be made definitely. Complete tuberculin anergy seems to be characteristic. The symptomatology of pulmonary syphilis is quite variable, and it may simulate tuberculosis and neoplasms.—*Lues und Lunge, A. V. v. Frisch, Beitr. Klin. Tuberk., March, 1934, lxxxiv, 390.—(M. P.)*

Thoracic Stomach.—The presence of part or all of the stomach in the thorax as a result of an abnormally short oesophagus is probably a much more common occurrence than the few reports about it would indicate. The first report of a case was by P. Bailey in 1919, who gave the name "Thoracic Stomach" to this condition. He recognized that the presence of the stomach in the thorax was in no sense a result of diaphragmatic hernia, but that it resulted from developmental defects, with the oesophagus ending at the level of the third costal cartilage. Since this report, six other instances have been recorded. In the present report 5 additional cases are presented in detail, three of these belonging to the group in which the major part of the stomach was in the thorax, the other two being examples of slight shortening of the oesophagus with only a small portion of the stomach being above the diaphragm. In the first case, a 60-year-old-woman had complained of a peculiar type of dyspnoea, occurring after slight exercise or after large meals. This diagnosis was not made at that time, but later the patient developed an acute high intestinal obstruction and roentgenological examination revealed two-thirds of the stomach in the thorax. The patient died following jejunostomy and left phrenicectomy; at autopsy it was found that the oesophagus was 4 cm. foreshortened, and that the obstruction had been caused by a coexistent ulcer at the pylorus which had not been visualized by X-ray examination. The next case was complicated by herniation of part of the colon into the thorax, which contained all of the stomach. The third case showed the same typical type of dyspnoea, and some palpitation, as well as a history of regurgitation of food, especially after overloading the stomach. In case 4, the symptoms were those of hyperacidity and were relieved by regular ulcer diet and alkalis; in this instance, as in the following one, the greater part of the stomach was in the abdominal cavity. In the last case symptoms of hyperacidity as well as dyspnoea and palpitation were outstanding, and seemed to be associated with overeating. In general, the first type of thoracic stomach produces cardiorespiratory symptoms, and the second type gastrointestinal symptoms. Of the 5 cases, all were in women and none was younger than 60 years at the time the diagnosis was made. Embryologically, it is evident that a thoracic stomach arises from the failure of the oesophagus to elongate properly. Many cases which have been considered as diaphragmatic herniae are probably, in actuality, cases of thoracic stomach. Since the condition is fundamentally an irremediable congenital defect, consideration of surgical intervention is useless. Medical treatment includes frequent small meals, a bland diet, and, if hyperacidity symptoms occur, ulcer management. The upright position after meals for one hour is recommended.—*Thoracic Stomach, H. W. Goodall & L. H. Hoyt, Arch. Int. Med., April, 1934, liii, 594.—(B. B.)*

Tuberculosis of Appendix.—A review of the literature yields 123 reported cases of authentic tuberculosis of the appendix. Included in this group are summaries of the 34 cases reported since 1917. Cases of miliary tuberculosis with generalized involvement of all the organs are not included. Primary tuberculosis of the appendix is rare, since only one has been reported in which no other tuberculous lesions could be demonstrated. To the previously reported list, 4 more cases are added. Three of these are presumed at this time to be primary tuberculosis.—*Tuberculosis of the Appendix, H. Koster & L. P. Kasman, Archiv. Surg., June, 1934, xxviii, 1149.—(J. F. B.)*

Detection of Dangerous Dusts.—The inhalation of particulate matter may affect the lung in two ways. It may produce fibro-

sis of the organ of such a degree as to be incompatible with health or even life, and it may modify unfavorably ordinary infectious processes. Experiments are described which have proved more convenient than dusting chambers for the differential diagnosis of biologically harmful from biologically inert dusts. The first was the subcutaneous injection of a suspension of the suspected dust into an animal which subsequently received an intravascular injection of an emulsion of tubercle bacilli. Dusts, which are known to be active, cause local necrosis and a pronounced cellular reaction in which the tubercle bacilli accumulate and multiply, while inert dusts bring about little or no tissue reaction and do not favor the growth of the bacilli. The objection to this experiment is that the lesion is produced subcutaneously rather than in the lung tissue. The second group of experiments consisted of the intratracheal injection of saline suspension of the dust to be investigated. When a noxious dust reaches the lung through inhalation or through intratracheal injection, the first lesion to be observed is in the lymph nodes at its root. As early as 3 months after intratracheal injections of a suspension of crystalline silica, or of finely ground flint, changes can be observed in the pulmonary lymph nodes, long before true silicotic lesions in the lungs are visible, but that these ultimately develop was shown by the examination of other animals in the same series which were allowed to survive for much longer periods. Control experiments with iron-coated silica and wellingtonite, both being inert dusts, showed merely a copious deposition of dust without any cellular activity or fibrosis. Thus it is clear that in the short space of three months or less it should be possible to estimate whether any given dust is likely to be among the active or inert dusts, though it is not claimed that a dust can be finally incriminated on indirect observations.—*Detection of Dangerous Dusts, E. H. Kettle, Lancet, April 28, 1934, ccxxvi, 889.—(B. T. McM.)*

Experimental Pneumonoconiosis.—In all occupations in which there is a recognizable dust hazard a considerable proportion of the suspended particles consists of some form of silicon. In fact according to modern views pneumonoconiosis and silicosis are practically synonymous terms. However, not all forms of silicon produce silicosis. The oxide, silica, is universally acknowledged to be harmful, but except for asbestos, which is a complex silica of iron and magnesium, the silicates are generally held to be innocuous. However, evidence has been put forward by Jones that sericite, a potassium-aluminum silicate, is the real cause of silicosis, and Kettle has found the allied silicate, kaolin, one of the most active dusts in producing experimentally the fibrosis characteristic of silicosis. Simple silicosis is rarely of clinical significance. Nearly always silicosis is associated with tuberculosis. Even in cases in which tuberculosis appears engrafted on a silicotic lung there is evidence that the pneumonoconiotic lesions were infective from the beginning. Kettle's experiments support this view, for lesions were rapidly produced in guinea-pig lungs by combining a dust with tubercle bacilli, whereas lesions were produced with great difficulty with dust alone.—*Experimental Pneumonoconiosis: Infective Silicatosis, E. H. Kettle, J. Path. & Bact., March, 1934, xxxviii, 201.—(E. R. L.)*

Silicosis and Tuberculosis in South Africa.—A report of the work accomplished during 1929 to 1932 by the Miners' Phthisis Medical Bureau has been compiled by its chairman, Doctor L. G. Irvine, and published by the Government of the Union of South Africa. It is suggested that the present policy of the Bureau of examining all applicants be modified if the industrial depression continues, because more applicants are approved than the industry can absorb and, therefore, much work appears to be wasted. From the routine examination of employees in rock-drilling for sewer construction in Johannesburg, it was realized that this kind of work presents a definite dust hazard and should, therefore, be rigorously controlled. A decline of 60 per cent in the incidence of silicosis in miners has occurred since the four-year period, 1912 to 1916. A more reliable measure of incidence, however, is the rate of liability to contract the disease in each successive year of underground service. This rate has undergone a marked decline during the past fourteen years. Yet the actual number of cases detected has increased, which is attributed to an improvement in diagnostic technique, and to the progressive heaping-up of miners in the later years of service at which time the incidence of silicosis is at a maximum. Silicosis is progressive, tends to become complicated by a tuberculous infection, and this tuberculous infection tends to develop atypically. The preventive measures adopted have resulted in influencing the production, but not the subsequent progressive course, of the disease. It is highly important to eliminate all open cases of tuberculosis among native miners.—*Silicosis and Tuberculosis in South Africa. Report of Miners' Phthisis Medical Bureau, Brit. M. J., January 20, 1934, no. 3811, 116.—(T. O. R.)*

Silicosis Among Sandstone Workers.—One thousand consecutive sandstone workers were examined to obtain a picture of the industry as a whole as distinct from selected groups of men. The cases fall into four broad geographical areas. In group 1 the stone contained probably not less than 90 per cent free silica; group 2, between 80 and 85 per cent; group 3, coarser-grained stone of approximately 90 per cent silica; group 4, about 50 per cent free silica. Workers of less than 10 years' exposure may show some fibrosis. After 10 years' exposure there is a sharp rise in the development of fibrosis and after 20 years' exposure there is a sharp rise in the development of silicosis. Precise occupation does not appear to influence the appearance of fibrosis but does influence the development of definite nodular silicosis. An average range of 10 years upward appears between the development of fibrosis and silicosis, being shorter in the occupation with most exposure to dust. When standardized for occupation and period of exposure the incidence of fibrosis is approximately the same for the four geographical groups and for silicosis it is fairly constant for groups 2, 3, and 4, but considerably higher in group 1. The difference in incidence of silicosis in the four groups may be partially explained by the length of time the quarry has been worked, how highly the stone is finished at the quarry, working methods, and type of sandstone. Of the 1,000 people examined, 433 showed clinical evidence of pulmonary fibrosis. One hundred and seventy-three of the group were X-rayed, and 64 showed no evidence of fibrosis, 64 showed early silicosis, 33 well-marked silicosis, and 12 advanced silicosis. The minimal exposure before the appearance of silicosis was for masons 11 years, scrapplers 20 years, rock-getters 21 years and planers 28 years.—*Silicosis among Sandstone Workers in Scotland and the North of England, T. Ferguson, Journ. Ind. Hyg., July, 1934, xvi, 203.*—(*L. F. B.*)

Nature of Asbestosis Bodies.—The presence of asbestosis bodies, golden-brown rod- and club-shaped segmented forms, in the pulmonary tissues distinguishes pulmonary asbestosis from other forms of silicosis. The nature of these bodies and their relation to asbestos crystals, which are also invariably present, was investigated by the precise optical and analytical chemical methods of modern crystallographic research. The needle-shaped asbestos crystals in the case investigated averaged 50μ long and 0.5μ thick, and were anisotropic. Their optical and physicochemical properties identified them as chrysolite, a hydrated magnesium silicate containing iron. The asbestosis bodies were much more protean in size and shape, the average length of 80 bodies being 67μ, the widths varying from 0.1 to 0.01 of the length, and the thickness through the frequently present clubbed ends being usually 2 to 4 times that of the handle. These bodies were isotropic. Their golden-brown color was due to the presence of iron which was demonstrated by the usual microchemical tests. In most of the asbestosis bodies needle-like structures, resembling asbestos crystals, were distinguished lying within the bodies as a central core. It was shown that the asbestos crystals are indeed the *Anlage* of the asbestosis bodies. The first step in the transformation is the emigration of the chrysolite crystals of the metallic ions, Fe and Mg, under the influence of the tissue fluids. This leaves behind a crystal lattice of silicic acid of unchanged shape from the parent chrysolite crystal. Protein is then adsorbed from body fluids as a sol on this remaining crystal lattice, and converted into a gel by the outward diffusion of the silicic acid through the adsorbed protein layer. That this adsorbed substance is protein in nature was indicated by the fact that it was combustible, amphoteric, and digestible by trypsin. Also similar bodies could be artificially produced by soaking acid-treated asbestos fibres (to remove Fe and Mg ions) in egg-white solutions. The final step is the slow resorption of the adsorbed protein layer by the body fluids, leaving behind an enlarged lattice which becomes saturated with iron oxides, which is the typical asbestosis body. This iron may be derived from the body stores or may represent the return of the iron which initially migrates out of the chrysolite crystals. Asbestosis is to be considered as a special form of silicosis. The question arises as to why silica crystals other than asbestos do not, when embedded in tissues, adsorb protein and form bodies similar to asbestosis bodies. The probable explanation is to be found in a comparison of the respective lattice structures. That of asbestos when deprived of its metallic atoms is such that a strong electrostatic field exists across its surfaces which favors adsorption, while the reverse is true for the silicates occurring in silicosis.—*Über die Asbestosiskörperchen, P. J. Beger, Virchow Arch. Path. Anat., November, 1933, ccxc, 280.*—(*A. E. M.*)

Haematite Miner's Lung.—A number of haematite miners in the West Cumberland mine field have died with a grossly fibrotic lesion of the lungs in which both silica and haematite dust are present in large amount. The fibrotic regions are dense and of bright brick-red color. The fibrosis is massive and diffuse, and almost always most

intense in the upper half of each lung. An associated tuberculosis was found in 11 of the 15 cases studied. The radiological picture was characteristic. The silica content of the lungs averaged 1.66 per cent of the dry weight in 14 cases, a figure comparable with 1.72 per cent in 8 cases of silicosis, and 1.78 per cent in the lungs of 7 sand-blasters, examined by the same method. The condition is considered to be a form of silicosis, approximately called "sidero-silicosis." Dry drilling has been responsible for much of the development of the condition, and wet drilling has diminished the risk to a slight extent only, as the speed of the process has been increased at the same time. It is impossible at present to give an approximate idea of the frequency of the condition.—*The Pulmonary Fibrosis of Haematite Miners, M. J. Stewart and J. S. Faulds, J. Path. & Bact., July, 1934, xxxix, 233.*—(*E. R. L.*)

Action of Mica Dust.—Present conceptions on the mechanism of pulmonary silicosis are questioned in the light of this experimental study. Animals, after being placed in atmosphere laden with mica dust, were studied after varying periods of exposure. By histological studies it is shown that mica is noxious to the pulmonary elements and mica granulomata are formed. Progressive dissolution of mica particles is shown, first, by the cell degeneration, and later an impregnation by mineral matter. The mica cells remain in the alveolus in which they first settled. The reactions of the pulmonary elements to mica are possibly similar to those of siliceous rock. It is possible that silica and silicates have an identical action on cells, or the active principle of siliceous rocks may be certain silicates and not free silica. Jones has considered sericite, a double silicate of aluminum and potassium, to be responsible for pulmonary damage. The present observations confirm Jones's theory. Mineral pneumonoconiosis is a more exact term than pulmonary silicosis.—*The Action of Mica Dust on Pulmonary Tissue, A. Policard, J. Indust. Hyg., May, 1934, xvi, 160.*—(*J. F. B.*)

Sericite in Foundry Dust.—Because of a great difference in the disability and death claims from two foundries in the same town a detailed study of both was made. The operations were very nearly the same in the two foundries with the exception that the castings made in one were lighter and needed finer finishes. All other conditions were found to be quite similar, yet in foundry A there were over 20 claims for disability from pneumonoconiosis or tuberculosis or both, while in foundry B there was none. Dust counts in foundry B were higher than in foundry A, but there was high percentage of sericite in the latter due to one sand used for finishing. It was shown that a fine sand poor in sericite may be substituted with no operating difficulties. A foundry sand rich in sericite may contribute a large percentage of sericite particles in the respirable dust in a foundry and thus account for a number of claims for pneumonoconiosis.—*Sericite in Foundry Dust, C. S. Hurlbut & D. S. Beyer, J. Indust. Hyg., May, 1934, xvi, 169.*—(*J. F. B.*)

Search for Infective Agent in Hodgkin's Disease.—Since the report by Sternberg in 1898 claiming an aetiological relationship between tuberculosis and Hodgkin's disease, a voluminous and conflicting mass of evidence has accumulated. Interest in the possible tuberculous origin of Hodgkin's disease was rearoused by the reports of L'Esperance, who stated that she was able to produce tuberculosis in chickens and in previously vaccinated guinea pigs by injection of Hodgkin's nodes. Her findings have not been generally confirmed. Diseased splenic and lymph-node tissues from 15 patients with Hodgkin's disease, together with control diseased tissue from 8 patients with other lymphomata, were investigated (1) for the ability of the diseased tissue to produce tuberculosis in chickens, guinea pigs, rabbits, dogs and mice, (2) for the disease-producing capacity of these tissues as grafts, and (3) for the presence of tubercle bacilli or atypical acid-fast bacteria in these same tissues, special culture methods being used. The diseased tissues from the 23 patients were injected or transplanted into 199 animals of the species mentioned. An additional group of 23 chickens that were not given injections served as a control of environmental factors, especially of the occurrence of spontaneous tuberculosis. A group of 8 dogs received intracerebral injections. The animals were allowed to survive for periods varying from nine to thirteen months. The criteria used for the diagnosis of tuberculosis in the animals following injection were (1) the acquisition of a positive reaction to tuberculin, (2) the gross and microscopic morphological structure of tuberculous lesions, (3) the presence of stainable acid-fast bacilli in suspicious lesions, (4) the growth of acid-fast bacilli from such lesions on culture media and (5) the production of tuberculosis in animals in passage experiments. In the entire group of animals given injections of diseased human tissues, tuberculosis occurred in one chicken following injection of tissue from a patient with Hodgkin's disease, and one guinea pig following injections of lymphosarcomatous tissue. In the infected chicken a spontane-

ous infection was not ruled out. In passage experiments with tissues from these infected animals tuberculosis was again produced. Numerous lesions in diseased chickens superficially suggesting tuberculosis were considered nontuberculous because they did not definitely satisfy any of the five criteria previously laid down. No evidence was found that the diseased human tissues were transplantable or that they were capable of inducing in animals lesions with a similar histological structure. No strains of acid-fast bacteria were grown from these diseased human tissues by modern cultural methods. Likewise the occurrence of acid-fast forms of bacteria reported to exist as a transient phenomenon early in the cultures of these tissues was not confirmed. Avian tubercle bacilli detectable by the methods used were apparently not present in the tissues of the 15 patients with Hodgkin's disease.—*Hodgkin's Disease, Search for an Infective Agent and Attempts at Experimental Reproduction, P. E. Steiner, Arch. Path., June, 1934, xvii, 749.*—(*J. S. W.*)

Pulmonary Tuberculosis and Diabetes.—During the period of 1923 to 1933, 1,441 diabetics were treated in the Kaiserin Elisabeth Hospital in Vienna. Of these 116 had pulmonary tuberculosis. The frequency of pulmonary tuberculosis in diabetes was 10.17 per cent in males and 6.16 per cent in females. The percentage was higher in the younger age-groups. During the same period 3,616 patients with pulmonary tuberculosis were admitted, of whom 3.2 per cent had diabetes. The frequency and prognosis of the complicating disease is discussed according to the different types of pulmonary tuberculosis in Neumann's classification. The different types of pulmonary tuberculosis cannot be correlated with the degree of the metabolic disturbance, but mild cases of diabetes developed pulmonary tuberculosis quite rarely. The prognosis depends much on the severity of the diabetes. The frequency with which pulmonary tuberculosis develops in diabetic patients does not seem to depend upon the duration of the diabetes, but upon the quality of its treatment. Diabetics with pulmonary tuberculosis have approximately the same insulin response as uncomplicated diabetics. Hypersensitivity to insulin is relatively frequent, and insulin resistance is relatively rare, although the latter is frequent in other febrile diseases. In the majority of the cases, tuberculosis was the secondary disease. Only in a few patients with productive forms of tuberculosis was diabetes the secondary disease. In the latter group, the prognosis was not essentially changed by the development of diabetes. Exudative phthisis in diabetics is probably due to exogeneous infection; it developed either simultaneously with the diabetes or later. Insulin therapy did not materially improve the prognosis of diabetes with pulmonary tuberculosis.—*Zur Klinik und Pathogenese der Lungentuberkulose beim Diabetes mellitus, R. Boller, Beitr. Klin. Tuberk., August, 1934, lxxxv, 173.*—(*M. P.*)

Diabetes and Tuberculosis.—Postmortem examination of diabetic patients reveals no single type or stage of tuberculosis. Small healed foci, small caseous areas in either the lungs or lymph nodes, more extensive healed or fibrotic areas in the apices are not infrequent. When death is due to tuberculosis the involvement is frequently with cavitation and terminal pneumonia or miliary spread, often presenting in the background the characteristics of a chronic infection. Miliary, meningitic and acute generalized tuberculosis are rare. The presence and amount of glycogen in tuberculous tissue may be influenced by diabetes and especially by insulin treatment. In general, uncontrolled diabetes is characterized by a disappearance of glycogen from the normal depots in liver, muscles and skin and excessive deposition in abnormal sites. Insulin causes a return of glycogen to the normal *loci*, and disappearance from the abnormal sites. Possibly the glycogen of tuberculous tissue is similarly affected. In the diabetic there is a considerable amount of amino-nitrogen available at all times in acute phases, and in acidosis the tissues are flooded with nitrogenous compounds. The bacilli here receive abundant food-supply for growth, and it has been frequently noted that a flare-up of tuberculosis occurs in diabetic coma and uncontrolled diabetes.—*The Association of Diabetes and Tuberculosis, Pathology and Etiology, H. F. Root, New England J. M., January 11, 1934, ccx, 78.*—(*R. C. S.*)

Diabetes and Tuberculosis.—Reviewing 201 diabetic children studied at the Deaconess Hospital, 42 per cent in the first decade and 74 per cent in the second had calcified tracheobronchial lymph nodes. Forty-seven out of 97 cases had positive intracutaneous tests. In many instances the contact was an older relative. Seventeen of these cases developed adult-type tuberculosis before twenty years of age, the sexes equally divided. In Vienna, Priesel and Wagner, in a series of 97 diabetic children, found about the same percentage of primary stage of tuberculosis infection as in the Morrison-Bogan series. The dates of onset of diabetes are more definitely established than the onset of tuberculosis. The degree of glycosuria in the diabetic with pulmonary tu-

berculosis varies little from that of the ordinary case. The blood-sugar shows about the same variations as in nontuberculous patients of comparable severity. Borock and Hecht found low sugar values in cases with bad prognosis. Low blood-sugar values might be expected when miliary tuberculosis had impaired the function of the liver and the adrenals. Fatty livers are found in both diabetes and tuberculosis. Cholesterol increases in diabetic cases inadequately controlled, the highest values being found in coma. Weltman ascribed to the cholesterol figure a prognostic significance in tuberculosis which has been confirmed by later investigation. Few cases are found without physical signs; only 10 out of 89 cases showed minimal lesions in the lung, moderate and advanced processes in 89 per cent of the tuberculous cases showing that the diagnosis of tuberculosis in the diabetic is tardy. The incidence of pulmonary tuberculosis increases with the duration of the diabetes, and the onset of tuberculosis was subsequent to the onset of diabetes in 85 per cent of the cases studied by the author. Calcified tracheobronchial lymph nodes occurred equally in the two sexes, but in later life males break down twice as frequently as females.—*The Association of Diabetes and Tuberculosis, Clinical Features, H. F. Root, New England J. M., January 18, 1934, ccx, 127.*—(*R. C. S.*)

Diabetes and Tuberculosis.—Frequent blood-sugar analyses should be determined in the tuberculous diabetic, so that insulin dosage may be adequately controlled, as terminal cases may easily be thrown into state of hypoglycaemia. In a series of tuberculous diabetics receiving insulin therapy, great improvement in nutrition was noted. Insulin therapy increases the duration of life, and should be begun as soon as diagnosis is established. High carbohydrate diet, approximately 150 gm., has been found to be beneficial. Foods rich in calcium are also advised. The prognosis for the diabetic patient with tuberculosis, once considered hopeless, is now improved with the use of insulin and the various collapse procedures now available.—*The Association of Diabetes and Tuberculosis. Treatment, Prognosis and Prevention, H. F. Root, New England J. M., January 25, 1934, ccx, 192.*—(*R. C. S.*)

Diabetes and Tuberculosis.—Referring to table of autopsy cases recorded from 1859 to 1932 the incidence of active tuberculosis in diabetics is 28.4 per cent and 22.9 per cent for nondiabetics, indicating a frequency of tuberculosis probably two or three times as great in the diabetic as would be expected. The death-rate from tuberculosis (all forms) in the United States has fallen from 400 in 1866 to 69.1 in 1930. The death-rate in Massachusetts for all forms of tuberculosis declined from 144 per hundred thousand in 1917 to 73 in 1927 and to 64.2 in 1930. Coincident with the falling death-rate from tuberculosis, the death-rate from diabetes has increased. In 1890 the diabetic death-rate per 100,000 in the Registration Area of the United States for 45 years and over was 20.6, whereas in 1920 it was 57.3. The great increase in the number of diabetics in the community is due to better diagnosis, better treatment, and the increased longevity of the population as a whole bringing more people into the diabetic age. Dr. L. B. Morrison and Dr. I. K. Bogan in a series of 1,659 X-rays of lungs on patients admitted to New England Deaconess Hospital for dietary treatment of diabetes found (1) no abnormality, 187 cases; (2) tracheobronchial adenitis, 85; (3) calcifications in tracheobronchial lymph nodes, 1,289; (4) doubtful,—slight increase in markings without pulmonary infiltration, 58; (5) chronic pulmonary tuberculosis, 39; (6) acute pulmonary tuberculosis, 1; (7) old healed tuberculosis, 21. In this series 40 cases of pulmonary tuberculosis were found, two in children and thirty-eight among 1,373 adults, an incidence of 2.8 per cent for adults. Among 750 diabetics with onset of the disease before fifteen years of age, twelve have subsequently developed adult-type pulmonary tuberculosis, an incidence of 1.6 per cent. Data from 5,000 cases in the school population from the Chadwick Clinics, show an incidence of 0.12 per cent. Deaths from pulmonary tuberculosis among diabetics increased from 4.7 per cent of 342 deaths before June, 1919, to 6.7 per cent of 1,503 deaths between August, 1922, and November, 1931.—*The Association of Diabetes and Tuberculosis, Epidemiology, Pathology, Treatment and Prognosis, H. F. Root, New England J. M., January 4, 1934, ccx, 1.*—(*R. C. S.*)

Erythema Nodosum.—Ultraviolet irradiation to a limb which is the site of an eruption of erythema nodosum nodules results in a rapid involution of the nodules as compared with the opposite, nonirradiated limb. Fresh crops of nodules which may appear during the course of the treatment tend to be less intense or absent in the irradiated area. The skin reaction to tuberculin also is diminished by exposure to ultraviolet rays. This is presented as further evidence of the tuberculous (allergic) nature of erythema nodosum. This condition occurs as a manifestation of the rapidly accumulated or augmented sensitivity occurring in some individuals after a recent tuberculous infection

or as a consequence of various factors (measles, puberty, seasonal variations) which influence the degree of allergy present.—*L'influence des rayons ultra-violets sur l'érythème noueux, D. Moritz, Arch. Méd. Enf., August, 1934, xxxvii, 476.*—(*M. D.*)

Erythema Nodosum.—In a group of 51 children with erythema nodosum of tuberculous aetiology, tuberculin tests were carried out at varying periods before the appearance of the rash. In the children in whom the tests were made more than a month before, all were negative. In those made from 2 to 4 weeks before the rash appeared, about half the tests were negative, and in those made within a week before, practically all were positive. Of the tests performed before the initial fever which preceded the rash, all were negative, while all but one of the tests performed after this (but before the appearance of the rash) were positive. This is further evidence to support the hypothesis that erythema nodosum is an allergic phenomenon which appears early in the course of a tuberculous infection, and that the onset of the allergic state is indicated by the initial fever that precedes by several days or weeks the skin phenomenon.—*Über die Tuberkulinempfindlichkeit bei Erythema nodosum vor der Eruption, Elinar Gamstedt, Monats f. Kinderhk., November, 1933, lix, 111.*—(*M. D.*)

Erythema Nodosum.—This condition is not due to bacillary infection nor is it indicative of active tuberculous disease in other parts of the body. Although it is most commonly associated with tuberculosis in children, it may be due to other infections which, like tuberculosis, give rise to a constitutional and cutaneous allergy.—*La posizione attuale dell'eritema nodoso in tisiologia, E. Trepiccioni, La lotta contro la tuberculosi, August, 1933, iv, 826.*—(*U. E. Z.*)

Erythema Nodosum after *BCG* Vaccination.—In 3 cases erythema nodosum appeared in tuberculin-negative persons simultaneously with tuberculin sensitivity. The period of incubation for the eruption was the same for the *BCG* vaccination as for the natural tuberculous infection. The *BCG* foci reacted at the same time or earlier than the appearance of the erythema eruption. These results support the idea that erythema nodosum is a tuberculous symptom. The reaction of the *BCG*-vaccine-depots showed great similarity to the reaction in the hilum, indicating the analogous nature of the process in the hilum to that in the site of injection. A local latent allergy was produced in the skin by tuberculin injection, lasting for five weeks.—*Einige Fälle von Erythema Nodosum Bei BCG—Geimpften, A. Kristenson, Acta Tuberc. Scandinav., Fasc. 1–2, 1934, viii, 110.*—(*F. B. S.*)

Bacteraemia in Leprosy.—No growth was found to occur on the following 3 types of media inoculated with blood from 462 patients at Culion Leper Colony, suffering with advanced leprosy in its various manifestations. *1:* From 200 samples of blood in which the serum was removed and then the corpuscles dissolved by distilled water, the precipitates were cultured by the technique and on Loewenstein's medium for six to eight weeks at 37°C. *2:* Two hundred samples of blood were transferred directly into cooked meat-beef-heart-broth medium and incubated. At weekly intervals, for eight weeks, a loopful of the broth suspension was streaked over the surface of "NNN medium." *3:* In 62 cases the blood was allowed to clot and then centrifugated. To each clot was added 50 cc. of sterile glycerol-infusion broth and the mixture incubated. At weekly intervals for six weeks a loopful of the broth was streaked over the surface of "NNN medium" and incubated.—*Bacteriology of Leprosy. IV. Bacteremia, M. H. Soule, Proc. Soc. Exper. Biol. & Med., June, 1934, xxxi, 1200.*—(*F. B. S.*)

Tubercle Bacilli in Dementia Praecox.—Following the published work of Loewenstein in which he considers the tubercle bacillus to be the aetiological factor in cases of dementia praecox the authors, two of whom were specialists in psychiatry, studied cases of hebophrenia in 41 females. Fifteen of these cases had had a history of tuberculosis, either by family contact or actual lesions. Unlike Loewenstein, who did not specify the type of case of dementia praecox he used in his studies, these authors chose hebophrenic-catatonic dementia praecox cases, of the type of Morel-Kraepelin, of which there could be no doubt as to the diagnosis. Guinea-pig inoculations, cultures and direct smears of the blood of these patients and of the cerebrospinal fluid of 10 cases were made. In no instance were any acid-fast bacilli recovered. These experiments tend to show, that the tubercle bacillus is not the aetiological factor in dementia praecox.—*Recherche sur la bacillémie tuberculeuse effectuée simultanément par la méthode de Loewenstein et par inoculation au cobaye des malades atteints de démence précoce, A. Saenz, C. Pascal, L. Costil & J. Chapoulaud, Comp. Rend. Soc. Biol., April 28, 1934, cxv, 1681.*—(*M. T. W.*)

Experimental Amyloidosis.—Recent investigations indicate that amyloidosis is not a degenerative disease but the result of a long continued metabolic disorder, probably protein in nature. Amyloidosis can be produced in all albino mice by subcutaneous or intramuscular injections of a 5 per cent aqueous suspension of sodium caseinate. In the studies reported the mice were given prolonged treatment with the drug, receiving daily injections of from 0.2 to 0.4 cc. of the 5 per cent suspension for five successive days each week. The animals to be killed were given injections of from 0.5 to 1 cc. of 10 per cent aqueous solution of congo-red in the right lateral tail-vein. The production and absorption of the amyloid material was studied (gross appearance and sections), as well as the influence of diet on amyloidosis. The mechanism in the production of amyloidosis and the origin of amyloid are as yet unknown. The injected material can be dismissed as the possible source of the amyloid, or even as one of the contributors, as other protein and certain nonprotein compounds will produce amyloidosis. The production of amyloidosis is wholly dependent on the number of inoculations and the period of time during which the irritant is administered. It is possible that the injected substance produces a disturbance of endogenous protein metabolism in which the rate of formation exceeds the ability of the tissues to dispose of the amyloid material. Chemical analysis shows that amyloid is a complex protein, and not from ingested protein. The earliest amyloid appears within the fixed and wandering cells of the reticular system. As these cells disintegrate, extracellular amyloid appears, grows in amount, and finally replaces the parenchyma of the organ involved. If the infiltration of amyloid in certain tissues was a simple precipitation or separation of circulating protein, the deposition of amyloid would be universal. The intracellular inclusion of amyloid by the wandering macrophages and in the phagocytic fixed-tissue cells of the spleen and liver suggests phagocytosis by these cells of the circulating protein. At any rate, early in the disease, only intracellular amyloid is evident objectively. Later, with the exhaustion, death and disintegration of the phagocyting cells, ferments, enzymes or the chemical substances may be liberated which are necessary for the precipitation and deposition of the extracellular amyloid. It is probably more than a coincidence that extracellular amyloid is observed just about the time that the phogocytic cells begin to disintegrate. Except in albino mice showing precursory or very early evidences of amyloidosis, no spontaneous resorption of amyloid was observed. Albino mice given a preparation of powdered whole liver in their diet showed resorption only when the degree of amyloidosis was no more than moderate. No retrogression of the disease was noted in advanced cases. Comparative studies indicate that a well-balanced, thoroughly adequate diet exercises a retarding influence on the production of amyloidosis. The addition of a preparation of desiccated powdered whole liver to the stock diet delays the formation of amyloidosis. Inadequate or deficient diets did not accelerate the development of amyloidosis. Some evidence is presented to show the retarding influence of vitamins A and B on the formation of amyloidosis. With the technique described above, amyloidosis could not be produced in albino rats.—*Amyloidosis, Experimental Studies, H. G. Grayzel, M. Jacobi, H. B. Warshall, M. Bogin & H. Bolker, Arch. Path., January, 1934, xvii, 52.*—*(J. S. W.)*

Amyloidosis in Tuberculous Rabbits.—Amyloid degeneration of the spleen, liver and kidneys tends to occur in chronic wasting diseases, particularly in those in which suppuration is present; hence, most cases of this condition are found in chronic tuberculosis. The material for the present study consisted of a group of 175 rabbits that died of bovine tuberculosis. Gross and microscopic examination of the tissues was made in each case. Sections were carefully stained to determine the presence of amyloid material. The average length of life of the animals was six and one-half months with a lower limit of two weeks and an upper limit of twenty months. Rabbits living only two months did not show any amyloid changes. These animals did not show much caseation. In those living longer, in the third month the incidence of amyloidosis was 23 per cent, in the fourth month 55 per cent, and in the succeeding months between 60 and 70 per cent. The spleen, liver and kidneys showed the greatest involvement. The spleen was most frequently involved, and in a number of animals was the only organ affected. The early changes in the spleen consisted of a deposition of amyloid substance in the capillary walls at the edge or border of the malphigian corpuscles, forming in section a "rim" around the follicle. Later, extension occurred toward the centre of the follicle, but the capillaries rarely were constricted. In approximately one-half of the cases the amyloid was not confined to the follicles, but had also invaded the pulp, so that the entire organ was a mass of amyloid material. In the liver amyloid deposits were found between the endothelium lining the sinusoids and the liver cells, the latter in severe cases being practically eliminated. The kidneys were

less frequently involved. Amyloid deposits were found in the capillary tufts of the glomeruli. There was no gross evidence of amyloidosis in the kidneys and livers of these animals save for an increased firmness of the organs. The clinical course seemed not to be affected by the occurrence of amyloidosis. As a matter of fact the unaffected group did not live as long as the affected group. Apparently amyloid changes are a function of chronicity rather than an untoward incident or complication in the course of infection. Amyloid changes were found more frequently in those animals with extensive caseation.—*Occurrence of Amyloidosis in Rabbits Experimentally Infected with Tuberculosis, R. M. Thomas, Am. J. Path., May, 1934, x, 419.*—(*J. S. W.*)

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INDEX OF ABSTRACTS OF TUBERCULOSIS

Abdominal supports in tuberculosis, 35
Absence of leucocytes, Immunity in, 12
Acid-base balance following atelectasis and pneumonectomy, 9
Acid-fast bacilli in tuberculous filtrates, 19
—— —— —— young guinea pigs, 17
—— bacteria from lepra filtrates, 21
—— group, Filterability of, 19
—— organisms from leprous lesions, 21
Actinotherapy for peritoneal and laryngeal tuberculosis, 28
Action of mica dust, 51
Adams, W. E., and Vorwald, A. J. Treatment of tuberculosis by bronchial occlusion, 40
——, ——. ——., Hastings, A. B., Compere, C. L., and Drastich, L. Acid-base balance following atelectasis and pneumonectomy, 9
After-care organization, Need for care and, 34
Agar, tubercle bacillus on, Characteristics of, 18
Air, Dry, for removal of fluid from bronchioles, 35
Alcoholization of intercostal nerves, Leucocytes following, 9
Alexander, J. Pneumolysis with pectoral muscle fillings, 39
——, ——., and Carr, D. Tuberculosis of chest-wall, 28
Allison, R. G., and Medelman, J. P. Classification of pulmonary tuberculosis in childhood, 4
Alsina, J. D., Saye, L., and Shelton, Rita. Tubercle bacilli in gastric contents of children, 5
Amyloidosis, Experimental, 55
—— in tuberculous rabbits, 55
Ane, J. N. See Menville, L. J., 8
Anspach, W. E. Atelectasis and bronchiectasis, 46
Antigens of tubercle bacillus, 14
Apicolysis, Supraclavicular, 40
Appendix, Tuberculosis of, 48
Arnstein, A. Disease of hilar lymph nodes, 44
Artery, pulmonary, Occlusion of, 10
——, ——, —— ——, Experimental, 11
Artificial pneumothorax, 37
—— —— at higher altitudes, 38
—— ——, Effect of fluid on, 38
—— ——, End-results of, 37
—— ——, Homolateral phrenicectomy and, 38
—— ——, Results of, 37
—— ——, Sanocrysin and, 36
Asami, G., Ito, H., and Tsuchija, J. Operation for Pott's disease, 30
Asbestosis bodies, Nature of, 50
Atelectasis and bronchiectasis, 46
—— —— pneumonectomy, Acid-base balance following, 9
——, diagnosis of, X-ray, 25
Atelectatic lung, Enlargement of, 47
—— ——, Reinflation of, 11
Atrophy and cirrhosis, extreme, Pulmonary collapse with, 41
Attempts to increase virulence of *BCG* culture, 18
Avian tubercle bacilli in guinea pigs, 16

Bacillary type, Modification of, by chemical composition of medium, 18
Bacilli, Acid-fast, in tuberculous filtrates, 19
——, ——, —— young guinea pigs, 17
——, Tubercle, and Brucella abortus in milk, 2
——, ——, Avian, in guinea pigs, 16
——, ——, bovine, Herrold's medium and, 18
——, ——, dissociation of, Influence of pH on, 17
——, ——, human strain of, Variability of, 15
——, ——, in blood-stream, 27
——, ——, —— body fluids, Bactericidal substances for, 16
——, ——, —— dementia praecox, 54
——, ——, —— gastric contents of children, 5
——, ——, —— guinea pigs, Fate of, 16
——, ——, —— peritoneal cavity, Fate of, 15
——, ——, —— urine, 33
——, ——, Non-acid-fast forms of, 14

Bacilli, tubercle, Superiority of urea for demonstrating, 27
Bacilluria, tubercle, Excretory, 21
Bacillus, tubercle, Antigens of, 14
——, ——, on agar, Characteristics of, 18
Bacteraemia in leprosy, 54
Bacteria, Acid-fast, from lepra filtrates, 21
Bactericidal substances for tubercle bacilli in body fluids, 16
Balance, Acid-base, following atelectasis and pneumonectomy, 9
Bardswell, N. Sanatorium industrial villages, 35
Barnard, Margaret Witter. X-ray mass-procedure in case-finding, 27
Barr, J. S. Splenic extract in Surgical tuberculosis, 29
Barwell, H. Prognosis of tuberculous laryngitis, 28
BCG culture, virulence of, Attempts to increase, 18
—— vaccination, Erythema nodosum after, 54
Beger, P. J. Nature of asbestosis bodies, 50
Bennet, K., and Hincrison, H. Tuberculous knee resembling Charcot's disease, 30
Bentley, F. J. Tuberculosis in young women, 1
Bernstein, C., Rothschild, H., and Friedenwald, J. S. The relation of allergy to immunity in tuberculosis, 11
Berthelot, A., Valtis, J., and van Deinse, F. Modification of bacillary type by chemical composition of medium, 18
Berthold, W. Superiority of urea for demonstrating tubercle bacilli, 27
Beyer, D. S., and Hurlbut, C. S. Sericite in foundry dust, 51
Bilateral pneumothorax, Treatment of, 47
Birch, C. A. Diagnosis of pleural perforations, 27
Birkhaug, K. E. Influence of pH on dissociation of tubercle bacilli, 17
Bisgard, J. D. Compression of thorax, 42
Blastomycosis of lungs and pleura, 47
Blood cholesterol in tuberculosis, 9
—— stream, Tubercle bacilli in, 27
Bock, K. A. Capillary reaction to tuberculin, 26
Bodies, asbestosis, Nature of, 50
Body fluids, tubercle bacilli in, Bactericidal substances for, 16
Bogin, M., Bolker, H., Grayzel, H. G., Jacobi, M., and Warshall, H. B. Experimental amyloidosis, 55
Bolker, H., Grayzel, H. G., Jacobi, M., Warshall, H. B., and Bogin, M. Experimental amyloidosis, 55
Boller, R. Pulmonary tuberculosis and, 52
Bone, metatarsal bone, Tuberculosis of, 31
Bones, Tuberculosis in shaft of long, in Chinese, 30
Boquet, A., Saenz, A., and Costil, L. Avian tubercle bacilli in guinea pigs, 16
Bovine infection in human tuberculosis, 2
—— origin, Tuberculous meningitis of human and, 34
—— tubercle bacilli, Herrold's medium and, 18
Bradshaw, H. H., and Lindskog, G. E. Reinflation of atelectatic lung, 11
Brain, Tuberculoma of, 33
Brock, R. C. Platelet count in tuberculosis, 22
Broderick, F. W. Teeth in tuberculosis, 43
Bronchial occlusion, treatment of tuberculosis by, 40
Bronchiectasis and situs inversus, 46
——, Atelectasis and, 46
——, Pathogenesis of, 45
Bronchioles, removal of fluid from, Dry air for, 35
Bronchograms in pulmonary disease, 23
Bronchography in bronchopulmonary tuberculosis, 23
—— —— chronic pulmonary tuberculosis, 23
Broncholithiasis, 45
Bronchopulmonary tuberculosis, Bronchography, 23
Brown, S. Examination of chest in lateral decubitus, 25
Brucella abortus in milk, Tubercle bacilli and, 2
Bruck, S. Round-foci type of tuberculosis, 7
Burns, G. Margaret. Milk consumption and nonpulmonary tuberculosis in children, 5

Calcification of pleura, 29
Calcium, serum-, Effect of viosterol on, 10

Capillary reaction to tuberculin, 26
Care and after-care organization, Need for, 34
Carr, D., and Alexander, J. Tuberculosis of chest-wall, 28
Case-finding, Tuberculosis, 27
——, X-ray mass-procedure in, 27
Caseation, Giant cells and, 8
Cattle, Tuberculoid lesion in, 6
Cavities, obliteration of, Operative exploration and, 41
Cavity, peritoneal, tubercle bacilli in, Fate of, 15
Cells, Exudate, with relation to hydrogen-ion concentration, 8
——, Giant, and caseation, 8
Central nervous system, Tuberculosis of, 33
Chang, C. P., Hsieh, C. K., and Miltner, L. J. Tuberculosis of shaft of long bone in Chinese, 30
Chapaulaud, J., Saenz, A., Pascal, C., and Costil, L. Tubercle bacilli in dementia praecox, 54
Characteristics of tubercle bacillus on agar, 18
Charcot's disease, Tuberculous knee resembling, 30
Chemical composition of medium, Modification of bacillary type by, 18
—— destruction of periosteum, 35
Chest films, Nodular shadows in, 25
—— in lateral decubitus, Examination of, 25
—— wall, Tuberculosis of, 28
Childhood, pulmonary tuberculosis in, Classification of, 4
—— tuberculosis, 4
Children, contact and noncontact, Tuberculin sensitiveness in, 6
——, gastric contents of, Tubercle bacilli in, 5
——, tuberculous, Eosinophilic leucocytes in, 6
Chinese, shaft of long bone in, Tuberculosis of, 30
Cholesterol, Blood, in tuberculosis, 9
Chronic pulmonary tuberculosis, Bronchography in, 23
Cirrhosis, Pulmonary collapse with extreme atrophy and, 41
Classification of pulmonary tuberculosis in childhood, 4
Cochran, H. W., Moore, R. L., and Humphreys, G. H. Occlusion of pulmonary artery, 10
Collapse, Pulmonary, with extreme atrophy and cirrhosis, 41
—— therapy patient, Surgical status of, 42
Compere, C. L., Drastich, L., Adams, W. E., and Hastings, A. B. Acid-base balance following atelectasis and pneumonectomy, 9
Completer pneumonectomy, 41
Composition, chemical, of medium, Modification of bacillary type by, 18
Compression of thorax, 42
Concentration, hydrogen-ion, Exudate cells with relation to, 8
Congenital tuberculosis, 3
Congestion and tuberculosis, 9
Consumption, Milk, and nonpulmonary tuberculosis in children, 5
Contact and noncontact children, Tuberculin sensitiveness, 6
Cooper, F. B. Filterability of acid-fast group, 20
Cord, spinal, Tuberculoma of, 33
Costil, L., Boquet, A., and Saenz, A. Avian tubercle bacilli in guinea pigs, 16
——, ——., Chapaulaud, J., Saenz, A., and Pascal, C. Tubercle bacilli in dementia praecox, 54
Cough, Whooping, and tuberculosis, 44
Count, Platelet, in tuberculosis, 23
Craig, W. S., Macgregor, A. R., and Kirkpatrick, H. J. R. Tuberculosis of central nervous system, 33
Cribbin, J. Sanocrysin and artificial pneumothorax, 36
Crimm, P. D., and Strayer, J. W. Effect of viosterol on serum-calcium, 10
Cultivation of *Mycobacterium leprae III*, 21

Dangerous dusts, Detection of, 48
Day, T. D. Giant cells and caseation, 8
Debacillation in pulmonary tuberculosis by sanocrysin, 36
Decubitus, lateral, chest in, Examination of, 25
Dementia praecox, Tubercle bacilli in, 54
Demonstrating tubercle bacilli, Superiority of urea for, 27
De Natale, A. Broncholithiasis, 45

Destruction, Chemical, of periosteum, 35
Detection of dangerous dusts, 48
Diabetes and tuberculosis, 52, 53
——, Pulmonary tuberculosis and, 52
Diagnosis of atelectasis, X-ray, 25
—— —— pleural perforations, 27
—— —— pulmonary tuberculosis, Early, 22
Diaphragm after phrenic surgery, 38
Disease, Charcot's, Tuberculous knee resembling, 30
——, Hydatid, of lung, 47
—— of hilar lymph nodes, 44
Disposition and heredity in tuberculosis, 2
Dissociation of tubercle bacilli, Influence of pH on, 17
Drastich, L., Adams, W. E., Hastings, A. B., and Compere, C. L. Acid-base balance following atelectasis and pneumonectomy, 9
Dry air for removal of fluid from bronchioles, 35
Duken, J. Primary tuberculosis of mouth, 28
Duran-Reynals, F., and Thomas, H. M. Effect of testicular extract on tuberculosis, 9
Dust, foundry, Sericite in, 51
——, mica, Action of, 51
Dusts, dangerous, Detection of, 48

Early diagnosis of pulmonary tuberculosis, 22
Effect of fluid in artificial pneumothorax, 38
—— —— testicular extract on tuberculosis, 9
—— —— viosterol on serum-calcium, 10
Eisenberg, A. A., and Lazarus, J. A. Tuberculosis of gall-bladder, 29
End-results of artificial pneumothorax, 37
Enlargement of atelectatic lung, 46
Eosinophilic leucocytes in tuberculous children, 6
Erythema nodosum, 53, 54
—— —— after *BCG* vaccination, 54
Evans, R. G. P. Hydatid disease of lung, 47
Examination of chest in lateral decubitus, 25
Excretory tubercle bacilluria, 21
Expectoration, Seroalbuminous, after pleural puncture, 22
Experimental amyloidosis, 55
—— occlusion of pulmonary artery, 11
—— pleural and pulmonary tuberculosis, 10
Experimental pneumonoconiosis, 49
Expiratory-phase roentgenograms, Value of, 24
Exploration, Operative, and obliteration of cavities, 41
Extract, Splenic, in surgical tuberculosis, 29
——, testicular, Effect of, on tuberculosis, 9
Extrapleural plombage, Material for, 42
Exudate cells with relation to hydrogen-ion concentration, 8

Fate of tubercle bacilli in guinea pigs, 16
—— —— —— —— —— peritoneal cavity, 15
Faulds, J. S., and Stewart, M. J. Haematite miner's lung, 50
Feldman, W. H. Herrold's medium and bovine tubercle bacilli, 18
——, ——. ——. Tuberculoid lesion in cattle, 6
Ferguson, T. Silicosis among sandstone workers, 50
Fetzer, H., Weiland, P., and Selter, H. Fate of tubercle bacilli in guinea pigs, 16
Fillings, muscle, pectoral, Pneumolysis with, 39
Films, chest, Nodular shadows in, 25
Filterability of acid-fast group, 19
Filtrates, lepra, Acid-fast bacteria from, 21
——, tuberculous, Acid-fast bacilli in, 19
Fluid, Effect of, in artificial pneumothorax, 38
—— from bronchioles, Dry air for removal, 35
Fluids, body, tubercle bacilli in, Bactericidal substances for, 16
Following alcoholization of intercostal nerves, Leucocytes, 9
—— atelectasis and pneumonectomy, Acid-base balance, 9
Forms, Non-acid-fast, of tubercle bacilli, 14
Foundry dust, Sericite in, 51
Freilich, E. B., Ragins, O. B., and Lewison, M. Tuberculoma of brain, 33
Friedenwald, J. S., Bernstein, C., and Rothschild, H. The relation of allergy to immunity in tuberculosis, 11
Furniss, A. Actinotherapy for peritoneal and laryngeal tuberculosis, 28

Gabriel, E. Whooping cough and tuberculosis, 44
Gaiginsky, A. Acid-fast bacilli in young guinea pigs, 17
Gall-bladder, Tuberculosis of, 29
Gamstedt, Elinar. Erythema nodosum, 54
Gastric contents of children, Tubercle bacilli in, 5
Giant cells and caseation, 8
Glitsch, W. Nodular shadows in chest films, 25
Goodall, H. W., and Hoyt, L. H. Thoracic stomach, 48
Gordon, B. Abdominal supports in tuberculosis, 35
Gough, G. A. C. Purification of tuberculin, 14
Grayzel, H. G., Jacobi, M., Warshall, H. B., Bogin, M., and Bolker, H. Experimental amyloidosis, 55
Griffith, A. S. Tuberculous meningitis of human and bovine origin, 34
Group, acid-fast, Filterability of, 19
Guinea-pig test, Improved, 26
—— pigs, Avian tubercle bacilli in, 16
—— ——, tubercle bacilli in, Fate of, 16
—— ——, young, Acid-fast bacilli in, 17
Gunasagaram, P. K., and Pai, M. Kesava. Artificial pneumothorax, 37

Haematite miner's lung, 50
Haematogenous pulmonary tuberculosis, 6
—— tuberculosis, Specific sensitization and localization of, 13
Haight, C. Complete pneumonectomy, 42
Hammond, T. E. Renal tuberculosis, 32
Hastings, A. B., Compere, C. L., Drastich, L., and Adams, W. E. Acid-base balance following atelectasis and pneumonectomy, 9
Hawes, J. B., 2nd, and Stone, M. J. Progress in tuberculosis, 1932–1933, 1
Head, J. Calcification of pleura, 29
Hedvall, E. Bactericidal substances for tubercle bacilli in body fluids, 16
Helbach, H., and Nüssel, K. Bronchiectasis and situs inversus, 46
Hepatic function during sanocrysin treatment, 36
Herborg, G. Red-cell sedimentation test during sanocrysin injections, 36
Heredity, Disposition and, in tuberculosis, 2
Herrold's medium and bovine tubercle bacilli, 18
Higher altitudes, Artificial pneumothorax at, 38
Hilar lymph nodes, Disease of, 44
Hinricson, H., and Bennet, K. Tuberculous knee resembling Charcot's disease, 30
Hodgkin's disease, infective agent in, Search for, 51
Homolateral phrenicectomy and artificial pneumothorax, 38
Horine, C. F., and Warner, C. G. Experimental occlusion of pulmonary artery, 11
Hoyt, L. H., and Goodall, H. W. Thoracic stomach, 48
Hsieh, C. K., Miltner, L. J., and Chang, C. P. Tuberculosis of shaft of long bone in Chinese, 30
Human and bovine origin, Tuberculous meningitis of, 34
—— strain of tubercle bacilli, Variability, 15
—— tuberculosis, Bovine infection in, 2
Humphreys, G. H., Cochran, H. W., and Moore, R. L. Occlusion of pulmonary artery, 10
Hurlbut, C. S., and Beyer, D. S. Sericite in foundry dust, 51
Hydatid disease of lung, 47
Hydrogen-ion concentration, Exudate cells with relation to, 8
Hyndman, O. R., and Landt, H. Congestion and tuberculosis, 9

Immunity in absence of leucocytes, 12
——, Relation of allergy to, in tuberculosis, 11
Improved guinea-pig test, 26
Increase virulence of *BCG* culture, Attempts to, 18
Industrial villages, Sanatorium, 35
Infants, Spontaneous pneumothorax in, 3
Infection, Bovine, in human tuberculosis, 2
Infections, pulmonary, Relation of sinusitis to, 43
Infective agent in Hodgkin's disease, Search for, 51
Influence of pH on dissociation of tubercle bacilli, 17

Intercostal nerves, alcoholization of, Leucocytes following, 9
Intrapleural pneumolysis, 40
Iraci, A. Homolateral phrenicectomy and artificial pneumothorax, 38
Ito, H., Tsuchiya, J., and Asami, G. Operation for Pott's disease, 30

Jachia, A. Chemical destruction of periosteum, 35
Jacobi, M., Warshall, H. B., Bogin, M., Bolker, H., and Grayzel, H. G. Experimental amyloidosis, 55
Jennings, F. L. Tuberculoma of spinal cord, 33
Joannides, M., and Shapiro, P. Supraclavicular apicolysis, 40
Jones, B. H. Significance of monilia in sputum, 48
Josephsen, G. Hepatic function during sanocrysin treatment, 36

Kasman, P., and Koster, H. Tuberculosis of appendix, 48
Keddie, J. A. G. Need for care and aftercare organization, 34
Kettle, E. H. Detection of dangerous dusts, 48
——, ——. ——. Experimental pneumonoconiosis, 49
Kidney, Tuberculosis of, 31
King, R. W., and McMaster, P. E. Tuberculosis of metatarsal bone, 31
Kinsella, T. J. Surgical status of collapse-therapy patient, 42
Kirkpatrick, H. J. R., Craig, W. S., and Macgregor, A. R. Tuberculosis of central nervous system, 33
Kleinschmidt, H. E. Tuberculosis case-finding, 27
Knee, Tuberculous, resembling Charcot's disease, 30
Koch phenomenon, mechanism of, Non-specific, 14
König, H. Tubercle bacilli in blood-stream, 27
Korol, E., and Scott, H. A. Value of expiratory-phase roentgenograms, 24
Koster, H., and Kasman, P. Tuberculosis of appendix, 48
Kristenson, A. Erythema nodosum after *BCG* vaccination, 54
Krompaszky, T. Eosinophilic leucocytes in tuberculous children, 6
Kschremp, K. Disposition and heredity in tuberculosis. 2

LaField, W. A., Ross, P. S., and Van Allen, C. M. X-ray diagnosis of atelectasis, 25
Landt, H., and Hyndman, O. R. Congestion and tuberculosis, 9
Laryngeal tuberculosis, Actinotherapy for peritoneal and, 28
Laryngitis, tuberculous, Prognosis of, 28
Lateral decubitus, chest in, Examination of, 25
Lauterwein, K., and Weiland, P. G. Fate of tubercle bacilli in peritoneal cavity, 15
Lazarus, J. A., and Eisenberg, A. A., 29
Lederer, M., and Rabinovitch, J. Lipoid pneumonia, 44
Lemon, W. S., and Montgomery, L. G. Experimental pleural and pulmonary tuberculosis, 10
Lepra filtrates, Acid-fast bacteria from, 21
Leprae, Mycobacterium, III, Cultivation of, 21
Leprosy, Bacteraemia in, 54
Leprous lesions, Acid-fast organisms from, 21
Lesion, Tuberculoid, in cattle, 6
Lesions, leprous, Acid-fast organisms from, 21
Leucocytes, absence of, Immunity in, 12
——, Eosinophilic, in tuberculous children, 6
—— following alcoholization of intercostal nerves, 9
Lewison, M., Freilich, E. B., and Ragins, O. B. Tuberculoma of brain, 33
Lindskog, G. E., and Bradshaw, H. H. Reinflation of atelectatic lung, 11
Lipoid pneumonia, 44
Localization of haematogenous tuberculosis, Specific sensitization and, 13
Long bones in Chinese, Tuberculosis of shaft of, 30
Lung, atelectatic, Enlargement of, 46
——, ——, Reinflation of, 11
——, Hydatid disease of, 47
——, miner's, Haematite, 50
——, Syphilis of, 48

Lungs and pleura, Blastomycosis of, 47
——, Oidiomycosis of, 48
Lymph nodes, hilar, Disease of, 44
Lymphadenitis, mesenteric, Tuberculous, 29
Lymphatics, thoracic, Study of, 8

Macgregor, A. R., Kirkpatrick, H. J. R., and Craig, W. S. Tuberculosis of central nervous system, 33
Malata, M., and Rabdoni, F. Leucocytes following alcoholization of intercostal nerves, 9
Mass-procedure, X-ray, in case-finding, 27
Material for extrapleural plombage, 42
Matson, R. C. Pneumolysis, 39
McKee, C. M., and Rich, A. R. Immunity in absence of leucocytes, 12
McMaster, P. E., and King, R. W. Tuberculosis of metatarsal bone, 31
Mechanism of Koch phenomenon, Nonspecific, 14
Medelman, J. P., and Allison, R. G. Classification of pulmonary tuberculosis in childhood, 4
Medium, chemical composition of, Modification of bacillary type, 18
——, Herrold's, and bovine tubercle bacilli, 18
Meissner, I., and Prausnitz, C. Attempts to increase virulence of *BCG* culture, 18
Meningitis, Tuberculous, of human and bovine origin, 34
Menkin, V. Exudate cells with relation to hydrogen-ion concentration, 8
Menton, J. Excretory tubercle bacilluria, 21
Menville, L. J., and Ane, J. N. Study of thoracic lymphatics, 8
Mesenteric lymphadenitis, Tuberculous, 29
Metatarsal bone, Tuberculosis of, 31
Mica dust, Action of, 51
Mikulowski, V. Improved guinea-pig test, 26
Miliary tuberculosis, 34
Milk, Brucella abortus in, Tubercle bacilli and, 2
—— consumption and nonpulmonary tuberculosis in children, 5
——, Tubercle bacilli and Brucella abortus in, 2
Miller, J. A. Pathogenesis of bronchiectasis, 45
Miltner, L. J., Chang, C. P., and Hsieh, C. K. Tuberculosis of shaft of long bone in Chinese, 30
Miner's, Haematite, lung, 50
Modification of bacillary type by chemical composition of medium, 18
Monilia in sputum, Significance of, 47
Montgomery, L. G., and Lemon, W. S. Experimental pleural and pulmonary tuberculosis, 10
Moore, J. Intrapleural pneumolysis, 40
Moore, R. L., Humphreys, G. H., and Cochran, H. W. Occlusion of pulmonary artery, 10
Moritz, D. Erythema nodosum, 54
Mouth, tuberculosis of, Primary, 28
Munne, C. Seroalbuminous expectoration after pleural puncture, 22
Murphy, J. E. Bronchography in bronchopulmonary tuberculosis, 23
Muscle fillings, pectoral, Pneumolysis with, 39
Muscles, skeletal, Tuberculosis of, 31
Mycobacterium leprae III, Cultivation of, 21

Nature of asbestosis bodies, 50
Need for care and after-care organization, 34
Nègre, L., and Weill-Halle. Variability of human strain of tubercle bacilli, 15
Nerves, intercostal, following alcoholization of, Leucocytes, 9
Nervous system, central, Tuberculosis of, 33
Neuhof, H. Bronchography in chronic pulmonary tuberculosis, 23
——, ——. Operative exploration and obliteration of cavities, 41
Nodular shadows in chest films, 25
Non-acid-fast forms of tubercle bacilli, 15
Noncontact children, Tuberculin sensitiveness in, 6
Nonpulmonary tuberculosis in children, Milk consumption and, 5
Nonspecific mechanism of Koch phenomenon, 14
Nüssel, K., and Helbach, H. Bronchiectasis and situs inversus, 46

Obliteration of cavities, Operative exploration and, 41
Occlusion, bronchial, Treatment of tuberculosis by, 40
—— of pulmonary artery, 10
—— —— —— ——, Experimental, 11
Oidiomycosis of lungs, 48
Operation for Pott's disease, 30
Operative exploration and obliteration of cavities, 41
Organisms, Acid-fast, from leprous lesions, 21
Organization, care and after-care, Need for, 34
Origin, human and bovine, Tuberculous meningitis of, 34

Pai, M. Kesava, and Gunasagaram, P. K. Artificial pneumothorax, 37
Parsons, L. G. Childhood tuberculosis, 4
Pascal, C., Costil, L., Chapoulaud, J., and Saenz, A. Tubercle bacilli in dementia praecox, 54
Patch test, Tuberculin, 26
Patient, collapse-therapy, Surgical status of, 42
Pectoral muscle fillings, Pneumolysis with, 39
Pedersen-Bjerghard, K. Antigens of tubercle bacillus, 14
Perforations, pleural, Diagnosis of, 27
Periosteum, Chemical destruction of, 35
Peritoneal and laryngeal tuberculosis, Actinotherapy for, 28
—— cavity, tubercle bacilli in, Fate of, 15
pH, Influence of, on dissociation of tubercle bacilli, 17
Phenomenon, Koch, mechanism of, Non-specific, 14
Phrenic surgery, Diaphragm after, 38
Phrenicectomy, Homolateral, and artificial pneumothorax, 38
Phrenicoexairesis, Unsuccessful, 39
Pinner, M. Haematogenous pulmonary tuberculosis, 6
Platelet count in tuberculosis, 22
Pleura, Blastomycosis of lungs and, 47
——, Calcification of, 29
Pleural and pulmonary tuberculosis, Experimental, 10
—— perforations, Diagnosis of, 27
—— puncture, Seroalbuminous expectoration after, 22
Plombage, extrapleural, Material for, 42
Plummer, W. W., Sanes, S., and Smith, W. S. Tuberculosis of skeletal muscles, 31
Plunkett, R. E. Tuberculosis case-finding, 27
Pneumolysis, 39
——, Intrapleural, 40
—— with pectoral muscle fillings, 39
Pneumonectomy, Acid-base balance following atelectasis and, 9
——, Complete, 41
Pneumonia, Lipoid, 44
Pneumoperitoneum, 43
Pneumothorax, Artificial, 37
——, ——, at higher altitudes, 38
——, ——, Effect of fluid on, 38
——, ——, End-results of, 37
——, ——, Homolateral phrenicectomy and, 38
——, ——, Results of, 37
——, ——, Sanocrysin and, 36
——, bilateral, Treatment of, 47
——, Spontaneous, in infants, 3
Policard, A. Action of mica dust, 51
Potter, B. P. Bronchograms in pulmonary disease, 23
Pott's disease, Operation for, 30
Prausnitz, C., and Meisner, I. Attempts to increase virulence of *BCG* culture, 18
Primary tuberculosis of mouth, 28
Prognosis of tuberculous laryngitis, 28
Progress in tuberculosis, 1932–1933, 1
Pullinger, E. J. Tubercle bacilli and Brucella abortus in milk, 2
Pulmonary artery, Occlusion of, 10
—— ——, —— ——, Experimental, 11
—— collapse with extreme atrophy and cirrhosis, 41
—— disease, Bronchograms in, 23
—— infections, Relation of sinusitis to, 43
—— tuberculosis and diabetes, 52
—— ——, chronic, Bronchography in, 23
—— ——, Debacillation in, by sanocrysin, 36
—— ——, diagnosis of, Early, 22
—— ——, Experimental pleural and, 10
—— —— in childhood, Classification of, 4
Puncture, pleural, Seroalbuminous expectoration after, 22
Purification of tuberculin, 14

Rabadoni, F., and Malata, M. Leucocytes following alcoholization of intercostal nerves, 9
Rabinovitch, J., and Lederer, M. Lipoid pneumonia, 44
Ragins, O. B., Lewison, M., and Freilich, E. B. Tuberculoma of brain, 33
Reaction to tuberculin, Capillary, 26
Red-cell sedimentation test during sanocrysin injections, 36
Reinflation of atelectatic lung, 11
Relation of allergy to immunity in tuberculosis, 11
—— —— sinusitis to pulmonary infections, 43
Removal of fluid from bronchioles, Dry air for, 35
Renal tuberculosis, 32
Resembling Charcot's disease, Tuberculous knee, 30
Results, End-, of artificial pneumothorax, 37
—— of artificial pneumothorax, 37
Rich, A. R., and McKee, C. M. Immunity in absence of leucocytes, 12
Ried, Margarete. Treatment of bilateral pneumothorax, 47
Riehm, W. Specific sensitization and localization of haematogenous tuberculosis, 13
Roentgenograms, expiratory-phase, Value of, 24
Root, H. F. Diabetes and tuberculosis, 52, 53
Ross, P. S., Van Allen, C. M., and LaField, W. A. X-ray diagnosis of atelectasis, 25
Rothschild, H., Friedenwald, J. S., and Bernstein, C. Relation of allergy to immunity in tuberculosis, 11
Round-foci type of tuberculosis, 7
Rubin, E. H. End-results of artificial pneumothorax, 37
Rudolf, G. deM. Dry air for removal of fluid from bronchioles, 35

Saenz, A., Costil, L., and Boquet, A. Avian tubercle bacilli in guinea pigs, 16
——, ——., Pascal, C., Costil, L., and Chapoulaud, J. Tubercle bacilli in dementia praecox, 54
Salle, A. J. Acid-fast organisms in leprous lesions, 21
Sanatorium industrial villages, 35
Sandstone workers, Silicosis among, 50
Sanes, S., Smith, W. S., and Plummer, W. W. Tuberculosis of skeletal muscles, 31
Sanocrysin and artificial pneumothorax, 36
——, Debacillation in pulmonary tuberculosis by, 36
—— injections, Red-cell sedimentation test during, 36
—— treatment, Hepatic function during, 36
—— ——, Thrombopoenia during, 36
Saye, L., Shelton, Rita, and Alsina, J. D. Tubercle bacilli in gastric contents of, 5
Schmidt, P. G. Material for extrapleural plombage, 42
Schwatt, H. Diaphragm after phrenic surgery, 38
——, ——. Unsuccessful phrenicoexairesis, 39
Scott, H. A., and Korol, E. Value of expiratory-phase roentgenograms, 24
Search for infective agent in Hodgkin's disease, 51
Secher, K. Thrombopoenia during sanocrysin treatment, 36
Sedimentation, Red-cell, test during sanocrysin injections, 36
Selter, H., Fetzer, H., and Weiland, P. Fate of tubercle bacilli in guinea pigs, 16
Sensitiveness, Tuberculin, in contact and noncontact children, 6
Sericite in foundry dust, 51
Seroalbuminous expectoration after pleural puncture, 22
Serum-calcium, Effect of viosterol on, 10
Shadows, Nodular, in chest films, 25
Shaft of long bones in Chinese, Tuberculosis of, 30
Shapiro, P., and Joannides, M. Supraclavicular apicolysis, 40
Shelton, Rita, Alsina, J. D., and Saye, L. Tubercle bacilli in gastric contents of children, 5
Significance of monilia in sputum, 47
Silicosis among sandstone workers, 50
—— and tuberculosis in South Africa, 49
Sinusitis, Relation of, to pulmonary infections, 43
Situs inversus, Bronchiectasis and, 46
Skeletal muscles, Tuberculosis of, 31
Smith, D. T. Oidiomycosis of lungs, 48

Smith, W. S., Plummer, W. W., and Sanes, S. Tuberculosis of skeletal muscles, 31
Soule, M. H. Bacteraemia in leprosy, 54
——, ——. ——. Cultivation of *Mycobacterium leprae III*, 21
Specific sensitization and localization of haematogenous tuberculosis, 13
Spinal cord, Tuberculoma of, 33
Splenic extract in surgical tuberculosis, 29
Spontaneous pneumothorax in infants, 3
Spreng, A. Blastomycosis of lungs and pleura, 47
Sputum, monilia in, Significance of, 47
Staehelin, R. Miliary tuberculosis, 34
Stein, I. F. Pneumoperitoneum, 43
Steiner, P. E. Search for infective agent in Hodgkin's disease, 51
Stewart, M. J., and Faulds, J. S. Haematite miner's lung, 50
Stomach, Thoracic, 48
Stone, M. J., and Hawes, J. B., 2nd. Progress in tuberculosis, 1932–1933, 1
Strain, human, of tubercle bacilli, Variability of, 15
Strayer, J. W., and Crimm, P. D. Effect of viosterol on serum-calcium, 10
Study of thoracic lymphatics, 8
Sulzer, H. Congenital tuberculosis, 3
Superiority of urea for demonstrating tubercle bacilli, 27
Supports, Abdominal, in tuberculosis, 35
Supraclavicular apicolysis, 40
Surgery, phrenic, Diaphragm after, 38
Surgical status of collapse-therapy patient, 42
—— tuberculosis, Splenic extract in, 29
Suter, F. Tuberculosis of kidney, 31
Sweeny, M. A., and Walker, E. L. Acid-fast bacilli in tuberculous filtrates, 19
Syphilis of lung, 48

Teeth in tuberculosis, 43
Test, guinea-pig, Improved, 26
——, Red-cell sedimentation, during sanocrysin injections, 36
——, Tuberculin patch, 26
Testicular extract, Effect of, on tuberculosis, 9
Therapy, collapse-, patient, Surgical status of, 42
Thomas, R. M. Amyloidosis in tuberculosis, 55
——, ——. ——., and Duran-Reynals, F. Effect of testicular extract on tuberculosis, 9
Thoracic lymphatics, Study of, 8
—— stomach, 48
Thorax, Compression of, 42
Thrombopoenia during sanocrysin treatment, 36
Trail, R. R. Effect of fluid on artificial pneumothorax, 38
——, ——. ——. Results of artificial pneumothorax, 37
Treatment of bilateral pneumothorax, 47
—— —— tuberculosis by bronchial occlusion, 40
——, sanocrysin, Hepatic function during, 36
——, ——, Thrombopoenia during, 36
Trepiccioni, E. Erythema nodosum, 54
Trocme, C. Artificial pneumothorax at higher altitudes, 38
Tschuiya, J., Asami, G., and Ito, H. Operation for Pott's disease, 30
Tubercle bacilli and Brucella abortus in milk, 2
—— ——, Avian, in guinea pigs, 16
—— ——, bovine, Herrold's medium and, 18
—— ——, dissociation of, Influence of pH on, 17
—— ——, human strain of, Variability of, 15
—— —— in blood-stream, 27
—— —— —— body fluids, Bactericidal substances for, 16
—— —— —— dementia praecox, 54
—— —— —— gastric contents of children, 5
—— —— —— guinea pigs, Fate of, 16
—— —— —— peritoneal cavity, Fate of, 15
—— —— —— urine, 33
—— ——, Non-acid-fast forms of, 14
—— ——, Superiority of urea for demonstrating, 27
Tubercle bacilluria, Excretory, 21
Tubercle bacillus, Antigens of, 14
—— —— on agar, Characteristics of, 18
Tuberculin patch test, 26
——, Purification of, 14
——, reaction to, Capillary, 26

Tuberculin sensitiveness in contact and non-contact children, 6
Tuberculoid lesion in cattle, 6
Tuberculoma of brain, 33
—— —— spinal cord, 33
Tuberculosis, Abdominal supports in, 35
——, Blood cholesterol in, 9
——, bronchopulmonary, Bronchography, 23
—— case-finding, 27
——, Childhood, 4
——, Congenital, 3
——, Congestion and, 9
——, Diabetes and, 52, 53
——, Effect of testicular extract, 9
——, haematogenous, Specific sensitization and localization of, 13
——, Heredity and disposition in, 2
——, human, Bovine infection in, 2
—— in South Africa, Silicosis and, 49
—— —— young women, 2
——, Miliary, 34
——, nonpulmonary in children, Milk consumption and, 5
—— of appendix, 48
—— —— central nervous system, 33
—— —— chest-wall, 28
—— —— gall-bladder, 29
—— —— kidney, 31
—— —— metatarsal bone, 31
—— —— mouth, Primary, 28
—— —— shaft of long bones in Chinese, 30
—— —— skeletal muscles, 31
——, peritoneal and laryngeal, Actinotherapy for, 28
——, Platelet count in, 22
——, pleural and pulmonary, Experimental, 10
——, Progress in, 1932–33, 1
——, Pulmonary, and diabetes, 52
——, —— chronic, Bronchography in, 23
——, ——, Debacillation in, by sanocrysin, 36
——, ——, diagnosis of, Early, 22
——, ——, Haematogenous, 6
——, ——, in childhood, Classification of, 4
——, Relation of allergy to immunity in, 11
——, Renal, 32
——, surgical, Splenic extract in, 29
——, Teeth in, 43
Tuberculosis, Treatment of, by bronchial occlusion 40
——, type of, Round-foci, 7
——, Whooping cough and, 44
Tuberculous children, Eosinophilic leucocytes in, 6
—— filtrates, Acid-fast bacilli in, 19
—— knee resembling Charcot's disease, 30
—— laryngitis, Prognosis of, 28
—— meningitis of human and bovine origin, 34
—— mesenteric lymphadenitis, 29
—— rabbits, Amyloidosis in, 56
Type, bacillary, Modification of, by chemical composition of medium, 18
—— of tuberculosis, Round-foci, 7

Unsuccessful phrenicoexairesis, 39
Urea, Superiority of, for demonstrating tubercle bacilli, 27
Urine, Tubercle bacilli in, 33

Vaccination, *BCG*, Erythema nodosum after, 54
Valtis, J., van Deinse, F., and Berthelot, A. Modification of bacillary type by chemical composition of medium, 18
Value of expiratory-phase roentgenograms, 24
Van Allen, C. M., and Wang, T. T. Enlargement of atelectatic lung, 46
—— ——, ——. ——., LaField, W. A., and Ross, P. S. X-ray diagnosis of atelectasis, 25
—— ——, ——. ——., Wolfe, J. J., and Wang, T. T. Pulmonary collapse with extreme atrophy and cirrhosis, 41
van Deinse, F., Berthelot, A., and Valtis, J. Modification of bacillary type by chemical composition, 18
van Riemsdijk, M. Characteristics of tubercle bacillus agar, 18
Variability of human strain of tubercle bacilli, 15
v. Frisch, A. V. Syphilis of lung, 48
Viethen, A. Tuberculin sensitiveness in contact and noncontact children, 6
Villages, Sanatorium industrial, 35
Viosterol, Effect of, on serum-calcium, 10

Virulence of *BCG* culture, Attempts to increase, 18
von Janik, F. Non-acid-fast forms of tubercle bacilli, 14
Voss, E. A. Tuberculous mesenteric lymphadenitis, 29

Walker, E. L., and Sweeney, M. A. Acid-fast bacteria from lepra filtrates, 21
——, ——. ——., —— ——, ——. ——. Acid-fast bacilli in tuberculous filtrates, 19
Waltz, H. D., and Wasson, W. W. Relation of sinusitis to pulmonary infections, 43
Wang, T. T., and Van Allen, C. M. Enlargement of atelectatic lung, 46
——, ——. ——., Van Allen, C. M., and Wolfe, J. J. Pulmonary collapse with extreme atrophy and cirrhosis, 41
Warner, C. G., and Horine, C. F. Experimental occlusion of pulmonary artery, 11
Warshall, H. B., Bogin, M., Bolker, H., Grayzell, H. G., and Jacobi, M. Experimental amyloidosis, 55
Wasson, W. W., and Waltz, H. D. Relation of sinusitis to pulmonary infections, 43
Watt, J. Early diagnosis of pulmonary tuberculosis, 22
Weiland, P. G., and Lauterwein, K. Fate of tubercle bacilli in peritoneal cavity, 15
Weiland, R., Selter, H., and Fetzer, H. Fate of tubercle bacilli in guinea pigs, 16
Weill-Halle and Nègre, L. Variability of human strain of tubercle bacilli, 15
Weissfeiler, J. Nonspecific mechanism of Koch phenomenon, 14
Whooping cough and tuberculosis, 44
Wildbolz, H. Tubercle bacilli in urine, 33
Willi, H. Spontaneous pneumothorax in infants, 3
Wolfe, J. J., Wang, T. T., and Van Allen, C. M. Pulmonary collapse with extreme atrophy and cirrhosis, 41
Wolff, E. Tuberculin patch test, 26
Women, young, Tuberculosis in, 1
Workers, sandstone, Silicosis among, 50
Würtzen, C. H. Debacillation in pulmonary tuberculosis by sanocrysin, 36

X-ray diagnosis of atelectasis, 25
—— mass-procedure in case-finding, 27

Young guinea pigs, Acid-fast bacilli in, 17
—— women, Tuberculosis in, 1

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INDEX NUMBER

THIS NUMBER COMPLETES VOLUME XXXI

Vol. XXXI JUNE, 1935 No. 6

THE AMERICAN REVIEW OF TUBERCULOSIS

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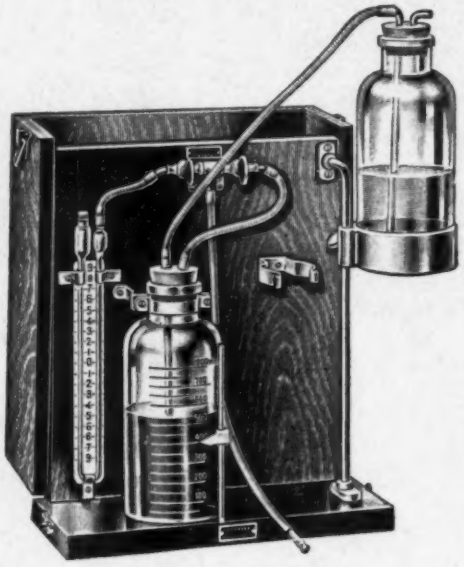

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Entered as second-class matter March 9, 1917 at the postoffice at Baltimore, Md., under the act of August 24, 1912. Acceptance for mail g at special rate of postage provided for in Section 1103, act of October 3, 1917. Authorized on July 2, 1918

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Table of Contents for the July issue

HEDBLOM, CARL A.: The Results of Surgical Treatment of Pulmonary Tuberculosis.

DOLLEY, FRANK S.: Apical Thoracoplasty.

BEATTY, OREN A.: Phrenicectomy in Closing Pulmonary Cavities and End-Results.

DOWD, GERALD R.: Cultural Characteristics of the R1 Strain of Tubercle Bacillus with Particular Reference to Dissociation.

DOWD, GERALD R.: A Bacteriological Study of Attenuated (R1) Tubercle Bacilli Recovered from Silicotic and Normal Guinea Pigs.

SWEANY, HENRY C.: Observations on Multiple Tuberculous Calcifications.

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THE past few years have focused increasing attention upon the value of yeast in the treatment of deficiencies of vitamins B and G. Fruits and vegetables are relatively low in vitamin B. Milk also is low in the antineuritic factor. Whole grain cereals are higher than fruits, vegetables, and milk in vitamin B, but unfortunately there are many who excessively use a meat, potato, and refined cereal diet, which is very much inclined to be short in this vitamin. It seems probable then that deficiencies, at least of a moderate degree, of the antineuritic vitamin are more prevalent than commonly supposed.

INFANTS—Because both cow's milk and human milk are low in vitamin B, it seems likely that many infants who do not thrive are suffering from partial deficiencies of the antineuritic factor. Indeed, a clear-cut syndrome frequently develops which is characterized by spasticity of arms and legs, rigidity of the neck, weight-loss, anorexia, fretfulness, pallor and poor tissue turgor.

So promptly do these symptoms usually respond to vitamin B therapy in the form of dried brewers' yeast that many physicians now favor its use as a routine throughout infancy.

LACTATION—The nursing mother needs from 3 to 5 times the normal requirement of vitamin B, not only to supply her child with this vitamin (which is transmitted through the milk) but also to assure successful lactation. Some authorities also believe it to be advisable to give supplements of yeast during pregnancy as well, both to allay neuritic symptoms in the mother and to protect the child.

ANOREXIA—Animal experimentation has shown that when vitamins B and G are withdrawn from a diet containing all other essentials, anorexia develops. Administration of yeast promptly restores appetite. Obviously, controlled conditions such as these are not feasible in clinical studies, but nevertheless it appears that dried brewers' yeast is of aid in correcting anorexia other than that due to chronic infections and psychological factors.

MALNUTRITION—Because vitamins B and G are essential for normal appetite and are growth-promoting, dried brewers' yeast is useful in combating malnutrition due to insufficiency of these vitamins, particularly in children.

CONSTIPATION—One of the earliest symptoms in vitamin-B-starved animals is laxity of the gastro-intestinal tract. Supplementing the diet with yeast aids in restoring intestinal tone when a deficiency of vitamin B exists. Hence, in selected clinical cases, yeast is of value in promoting peristalsis.

PELLAGRA—Dried brewers' yeast is a specific for virtually all cases of pellagra. Recent literature calls attention to the development of a condition known as secondary pellagra in cases where the diet, for medical or economic reasons, is restricted. In these instances, too, dried brewers' yeast has marked prophylactic and curative properties.

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